DRUM NO. 1

DIRECTIONS FOR TANNING CALFSKINS AND SIDE LEATHER IN DRUMS WITH TANOLIN

Pickling

In each pickling operation, in a drum, the fundamentals are approximately the same. Weigh the stockfrom the bate. For each 100 lbs. use 10 gallons water and acid and salt as described below.

For light weight calf	3/4 of 1% Sulphuric Acid 4 lbs. Salt
For medium calf and sides split from lime	1% Sulphuric Acid 5 lbs. Salt
For heavy calf and light weight sides	1-1/4 to 1-1/2% Sulphuric Acid 8 lbs. Salt
For Sole (Heavy Sides)	2-1/2% Sulphuric Acid and 15 lbs. Salt

Run the drum 30 to 45 minutes for light calf, medium calf or sides split from the lime.

Run the drum 1 hour to 1-1/2 hours for heavy calf and light weight sides.

Run the drum 2 to 3 hours for heavy sides.

Horse up or pile down smooth for 24 hours or 48 hours.

Tanning

For each 100 lbs. pickled stock use:

For light calf	4 lbs. salt
For medium calf and light sides split from lime	5 lbs. salt
For heavy calf and light weight sides	6 lbs. Salt
For heavy sides	8 lbs. salt

Put salt and 8 gallons of water per 100 lbs. stock in drum and run 5 minutes to dissolve salt.

Add pickled stock to drum and run 5 to 10 minutes.

For each 100 lbs. pickled stock dissolve:

For light calf - - - - - - - - - - - - - - - -7% Tanolin
For medium calf and sides
split from lime- - - - - - - - - - - - - - - -7-1/2% Tanolin
For heavy calf and light
weight sides - - - - - - - - - - - - - - - - -8% Tanolin
For heavy sides- - - - - - - - - - - - - - - -9-10% Tanolin

Tanolin Dissolving Directions

In a 50 gallon wooden barrel, with a steam pipe, bring to a boil 20 gallons of water. Stir in 200 lbs. Tanolin and continue stirring and boiling two or three minutes. Take out steam pipe and cover barrel. The next day stir two or three minutes and Tanolin will be dissolved. Add cold water to bring the liquor up to the 50 gallon mark. Each gallon will contain 4 lbs. Tanolin. If it is desirable to dissolve a smaller quantity than the directions above call for, simply abide by the proportions of water and Tanolin mentioned above.

It is convenient practice to prepare the necessary Tanolin solution the afternoon before the day on which it is to be used as this allows ample time for it to cool over night and obviates the necessity of diluting it with cold water to cool it rapidly for prompt use.

For each 100 lbs. of skins in the drum, take the requisite percentage amount of above Tanolin solution (4 lbs. per gal.) and add enough more cold water to bring the total amount of tanning solution to 4 gals. for each 100 lbs. of skins in the drum.

EXAMPLE: 500 lbs. of stock in drum at 8% Tanolin requires 40 lbs. of Tanolin which is 10 gals. of the dissolved Tanolin. Total Tanolin liquor required for 500 lbs. of stock on basis of 4 gals. total per 100 lbs. is 20 gals. Therefore, it is necessary to add 10 gals. more water to the 10 gals. of dissolved Tanolin. This is in addition to the pickle liquor already in the drum.

Add 1/3 of Tanolin, run 30 minutes.

Add 1/3 of Tanolin, run 30 minutes more.

Add last 1/3 of Tanolin and run until stock is struck or blue all the way through. This will be approximately two to eight hours, depending on the thickness of stock, speed of drum etc.

It is now necessary to use some Bicarbonate of Soda in the following amounts and manner. For each 100 lbs. stock of

Light calf - - - - - - - - - - - - - - -Use 3/4 of 1%
Medium Calf and Sides
Split from Lime- - - - - - - - - - - - -Use 1%
Heavy Calf and Light
Weight Sides - - - - - - - - - - - - - -Use 1-1/4%
Heavy Sides - - - - - - - - - - - - - -Use 1-1/2%

Dissolve the Bicarbonate of Soda required in the proportion of 1 pound in 2 gallons water. Add one-quarter of this solution to drum every 15 minutes. Two or three hours later test by cutting off a few small pieces from thick part of skins or hides and boil for 2 to 3 minutes. The pieces must not curl or become hard. If they do the leather is not fully tanned. The stock should be run from 2 to 24 hours after the last portion of bicarbonate of soda has been added, depending on the thickness of the hide, speed of drum, etc. If the leather is not fully tanned in approximately the above mentioned time, it will be necessary to continue running drum and add an additional small amount of Bicarbonate of Soda that has been dissolved. When fully tanned, horse up or pile down smooth for 24 hours.

Leather is now ready to be split or shaved or both split and shaved.

Neutralize and wash as follows:

Reweigh after shaving and for each 100 lbs. shaved weight use 1% Bicarbonate as follows:

Dissolve each pound of Bicarbonate of Soda in 10 gallons of water, put leather in drum and start it running. Add soda solution and run 30 minutes. Drain the drum and turning in plentiful supply of water wash 30 minutes to 1 hour depending on stock. Be sure to have plugs removed and when possible use a slat door on drum. Water should run in and out of drum freely during washing procedure. Leather is now ready for such subsequent treatment as may be required.

DIRECTIONS FOR TANNING
HIDES FOR SOLE, HARNESS AND BELTING LEATHER
WITH TANOLIN IN A PIN MILL DRUM

Pickling

The stock immediately after washing from the bate is weighed. Prepare the pickle as follows: For each 100 lbs. of stock use 12 gallons of water, 12 lbs. of salt and 2 lbs. (by weight) of Sulphuric Acid. Throw the stock into the drum with the pickle and run the mill for 1-1/2 hours. Then take out the stock and horse it up for 24 to 48 hours. If, on account of the size of the drum in which the pickling is to be done, a larger proportion of water than 12 gals. to 100 lbs. of stock is used, increase the salt in the proportion of 1/2 lb. of salt for each extra gallon of water. The amount of Sulphuric Acid to 100 lbs. of stock should not be increased except with care. If the water is greatly increased (2 or 3 times), it may be necessary to increase the sulphuric acid, but this should be done after a trial. If the stock appears swollen or huffed and transparent, more salt is required; if it appears too slimy and slippery, more acid is required. When properly pickled the stock should appear white and opaque and as though it were tawed.

Tanning

Put in a clean drum 10 gals. of water and 8 lbs. of salt for each 100 lbs. of stock. The stock having been horsed up for 24 hours after pickling, is put in the salt water in the drum and run 15 minutes before adding tan liquor previously prepared as follows:

For each 100 lbs. of stock take 10 to 12 lbs. of Tanolin and dissolve it in boiling water using 1 gallon of water for every 3 lbs. of Tanolin. The best way to effect the solution of the Tanolin is to put the proper proportions of water into a barrel or tank, insert a

steam pipe so it will reach to within about 1 inch from the bottom of the barrel or tank, turn on the steam and bring the water to a vigorous boil. Then stir into the boiling water the proper weight of Tanolin, stirring it to insure thorough wetting. Then cover the barrel or tank with a bag or cover and boil 10 to 15 minutes. Now turn off the steam, remove the cover and stir the liquor for 5 minutes. The Tanolin will now be dissolved. The solution should be cooled to about 90°F. before using.

It is convenient practice to prepare the necessary Tanolin solution the afternoon before the day on which it is to be used as this allows ample time for it to cool over night and obviates the necessity of diluting it with cold water to cool it rapidly for prompt use.

Do not put the Tanolin in water and then let it stand before boiling as it will tend to form a semi-solid mass on the bottom of the dissolving receptacle with the result this mass will then be difficult to dissolve rapidly even by vigorous boiling.

Take 1/3 of the Tanolin solution and add to the contents of the drum and run the drum for one hour, then add another 1/3 of the Tanolin solution and run the drum for 2 hours; then add last 1/3 of tan liquor and run drum the balance of day and allow the hides to lie in the liquor in the drum over night. The first thing the next morning start the drum running and run for 3 to 5 hours, until a cut in the thickest part of stock shows that the chrome has fully penetrated. Then, for each 100 lbs. of stock, add 8 ounces of soda bicarbonate dissolved in a little water, and run the drum for 1/2 hour. Then repeat this operation and run drum for balance of the day. Let the stock rest the second night in the liquor. The next morning start the drum and run for one hour; then add another 8 ounces of soda bicarbonate and run drum until the stock is tanned.

(NOTE: Use 1 gallon water for each 8 ounces soda and feed slowly). If the stock is completely tanned a piece cut from the thickest part should stand boiling. If the piece cut off shrings materially and becomes hard upon boiling, the stock is not thoroughly tanned and should be milled until it will stand boiling. If the Tanolin in the liquor is completely exhausted; this will be evident by an almost colorless liquor, 1/2 to 1 pound of Tanolin per 100 lbs. of stock should be dissolved in 2 to 4 quarts of water and added to the drum. Be sure the stock is completely tanned by leaving it long enough in the tan liquor to make sure of this. There is no danger of overtanning the stock by leaving it too long in the Tanolin. When completely tanned the stock is removed and horsed up so that it is smoothed and allowed to drain from 24 to 48 hours. The stock is then pressed or set out to put into condition for shaving and splitting. After the stock is shaved or split it is ready for retanning in chrome, if so desired, otherwise proceed to neutralize and wash.

Neutralizing and Washing

The stock is then thrown into a drum and washed with a liberal supply of fresh running water for about 10 minutes. The slat door is then replaced by a tight door and 10 gals. of water per 100 lbs. of hides put in the drum. Then add through the hollow axle for each 100 lbs. of hides in the drum 2 lbs. of Bicarbonate of Soda dissolved in a little water. Run the drum for 40 minutes. The slat door is again put on and the stock allowed to rinse in a liberal supply of running water until free from all acid and salt; this will probably take from 30 to 40 minutes. The leather is then ready for such further treatment as may be requisite to produce the kind of finished leather desired.

DRUM NO. 20-A

DIRECTIONS FOR TANNING HIDES FOR SOLE, HARNESS, BELTING AND LACE LEATHER WITH TANOLIN R IN A PIN MILL DRUM

Pickling

The stock immediately after washing from the bate is weighed. Prepare the pickle as follows: For each 100 lbs. of stock use 12 gals. of water, 12 lbs. of salt and 2 lbs. (by weight) of Sulphuric Acid. Throw the stock into the drum with the pickle and run the mill for 1-1/2 hours. Then take out the stock and horse it up for 24 to 48 hours. If, on account of the size of the drum in which the pickling is to be done, a larger proportion of water than 12 gals. to the 100 lbs. of stock is used, increase the salt in the proportion of 1/2 lb. of salt for each gallon of extra water. The amount of sulphuric acid to the 100 lbs. of stock should not be increased except with care. If the water is largely increased (2 or 3 times) it may be necessary to increase the sulphuric acid, but this should be done after a trial. If the stock appears swollen or huffed, and transparent, more salt is required; if it appears too slimy and slippery more acid is required. When properly pickled the stock should appear white and opaque and as though it were tawed.

Tanning

Put in a clean drum 10 gals. of water and 10 lbs. of salt for each 100 pounds of stock. The stock having been horsed up for 24 hours after pickling is put in the salt water in the drum and run 15 minutes before adding the tan liquor previously prepared as follows: For each 100 lbs. of stock take 10 to 12 lbs. of Tanolin R. and dissolve it in boiling water using 1 gallon of water for every 3 pounds of Tanolin. The best way to effect the solution of the Tanolin is to put the proper proportion of water into a barrel or tank, insert a steam pipe so it will reach to within about 1 inch from the bottom of the barrel or tank, turn

on the steam and bring the water to a vigorous boil. Then stir into the boiling water the proper weight of Tanolin, stirring it to insure thorough wetting. Then cover the barrel or tank with a bag or cover and boil 10 to 15 minutes. Now turn off the steam, remove the cover and stir the liquor for 5 minutes. The Tanolin will now be dissolved. The solution should be cooled to about 90°F. before using.

It is convenient practice to prepare the necessary Tanolin solution the afternoon before the day on which it is to be used as this allows ample time for it to cool over night and obviates the necessity of diluting it with cold water to cool it rapidly for prompt use.

Do not put the Tanolin in water and then let it stand before boiling as it will tend to form a semi-solid mass on the bottom of the dissolving receptacle with the result this mass will then be difficult to dissolve rapidly even with vigorous boiling.

Take one-third of the Tanolin R solution and add to the contents of the drum and run the drum for 2 hours; then add another third of the Tanolin solution and run the drum for the balance of the day and allow the hides to lie in the liquor in the drum over night. The first thing the next morning start the drum running and add the last third of the Tanolin solution and continue running the drum for about 4 or 5 hours. Then, for each 100 lbs. of stock add 8 ounces of Soda Bicarbonate or Borax dissolved in a little water and run the drum the balance of the day. Let the stock rest the second night in the liquor. The next morning start the drum and run for one hour; then add another 8 ounces of soda bicarbonate or borax and run the drum until the stock is tanned. If the stock is completely tanned a piece cut off from the thickest part should stand boiling. If the piece cut off shrinks materially, and becomes hard upon boiling, the stock is not thoroughly tanned and should be milled until it

will stand boiling. If the Tanolin is all exhausted in the liquor which will be shown by the liquor being almost colorless, 1/2 to 1 lb. of Tanolin R per 100 lbs. of stock should be dissolved in 2 to 4 quarts of water and added to the drum. Be sure that the stock is completely tanned by leaving it long enough in the tan liquor to make this certain. There is no danger of overtanning the stock by leaving it too long in the Tanolin.

When completely tanned the stock is removed and horsed up so that it is smooth and allowed to drain from 24 to 48 hours.

The stock is then pressed or set out to put into condition for shaving or splitting. After the stock is shaved or split it is ready for retanning.

Retanning

Weigh the stock after shaving or splitting. For each 100 lbs. of stock dissolve 2 to 4 lbs. of Tanolin in 5 gals. of water.

Throw the shaved stock into an empty drum and while the drum is running add the warm concentrated Tanolin liquor (temp. 125°F.) through the hollow axle. Allow the drum to run 1 hour. The stock will by that time have completely absorbed the retanning liquor. The stock should then be removed and allowed to drain a full 12 hours before neutralizing and washing.

NOTE CAREFULLY: Provided the stock was tanned sufficiently to stand boiling, before being pressed and shaved, there is no danger of drawing the grain or otherwise harming the stock by adding the retanning liquor warm.

Neutralizing and Washing

The stock is then thrown into a drum and washed with a liberal amount of fresh running water for about 10 minutes. The slat door is then replaced by a tight door and 10 gals. of water per 100 lbs. of hides put in the drum. Then add through the hollow axle, for each 100 lbs. of

hides in the drum, 1 lb. of Bicarbonate of Soda or 1-1/4 lbs. of Borax dissolved in a little water. Run the drum for 40 minutes. The slat door is then again put on and the stock allowed to rinse in a liberal supply of running water until free from all acid and salt, which will probably be in 30 to 40 minutes.

The leather is then ready for such further treatment as may be requisite to produce the kind of finished leather desired.

SPECIAL NO. 20

TANNING OF SNAKE SKINS

Slow speed drums should be used.

Wet salted skins: Soak over night in fresh water. Wash well.

Dry salted skins: Soak over night in fresh water. Wash well then re-soak over night or until properly softened.

Flint dried skins: Soak over night in fresh water. Wash well by drumming. Again soak over night. Then soak over night in Caustic Soda solution using about two to ten pounds for each 100 gals. water. Wash well. Soak over night in fresh water.

Flesh soak the skins and weigh.

Liming: Use 7 to 10% of Lime and allow to remain in limes three to six days depending upon the ease with which the scales can be removed. Wash well then flesh and remove scales over the beam. Wash well.

Bating: Use 1 to 1½% Purogen DX or CS, either in drum or paddle. Run for 1 to 1½ hours, or until properly bated. Skins should be open and flacid and smooth on the grain. Do not bate too much, as there is a possibility of disturbing the color pigmentation of the skin.

To make certain of removing all lime it will be well to follow bating with the use of 1/2% Lactic Acid directly added to the bating liquor.

Wash in water 80°F. for about 5 to 10 minutes. Then take drained bated weight for subsequent operations.

Chrome Tannage:

If skins are to be chrome tanned it will be necessary to pickle at this point and proceed according to regular directions covering tanning of skins with Tanolin.

In tanning a choice of alum, vegetable or Formaldehyde tannage may be made depending upon for what use the leather is produced.

Alum Tannage:

First pickle using 3/4% acid, 12% salt, 10 gals. water. Run 30 minutes.

Then use
3% Alum Sulphate
6 ounces Soda Ash
2½% Salt
6% Flour
2% Egg Yolk

Dissolve alum in hot water with salt. Then cool to about 65°F. Make a light paste of flour and add to alum and salt solution. Then add the Soda Ash dissolved in water. Add water to egg yolk. Make thin paste and add to other paste. Add to drum. Run for 1½ hours. Allow to lay for 3 hours. Pile and drain over night. Then strike out to flatten grain. Dry slowly. Dampen and stake and buff flesh. Then fatliquor using 1½% Egg Yolk and 3 to 5% French Chalk. Set out and tack to dry. Finish as desired.

Vegetable Tannage: Make certain bated skins are free from lime. Tan in paddle using either stainless Sumach Extract alone or in combination with Gambier or treated Quebracho. Start with a weak liquor and strengthen gradually as skins tan. Several days will probably complete the tannage. Haul and pile over night. Then wash to properly clear and proceed to finish as desired.

Formaldehyde Tannage: White. Make certain bated skins are entirely free from lime as lime in each skin in this tannage will cause hardness in the finished leather. Use for each 100 lbs. of drained bated weight -

10 gals. Cold Water. Then give in 3 feeds 20 minutes apart
3½% Formaldehyde
3½% Borax
5 Ounces Formic Acid

Run 4 to 7 hours or until skins stand test of 170°F. Then wash with moderately warm water for 5 minutes followed by a cold water wash for about 10 minutes. Horse to drain for 12 to 24 hours.

Then fatliquor at 130°F. using 4 to 6% Sulphonated Castor oil and about 1/5% Acetic Acid. Run 30 to 45 minutes. Wash to clear well before horsing. Hang to dry. Dampen, stake and then wash well with 3% Borax for 30 minutes followed by clear water. Wash for 20 minutes. Then give at 130°F. 1½% Sulphonated Castor Oil with some whitening material if so desired, and run for 30 minutes. Then drain and tack and proceed to finish.

SPECIAL NO. 20-A

DIRECTIONS FOR TANNING REPTILE SKINS

WITH TANOLIN

IN A PIN MILL DRUM

The skins after being washed out of the puer should then be allowed to drain for a few minutes before weighing. For each 100 lbs. of drained, puered weight, place in a drum 12 gals. of water, 20 lbs. salt. Then throw in the skins. Allow the drum to run for a few minutes before adding through the gudgeon 2 to 2½ lbs. Sulphuric Acid for each 100 lbs. of drained weight. This is best added by pouring the weighed amount of acid into a bucket containing some of the salt liquor from the drum. Start the drum running and add the Sulphuric Acid through the gudgeon slowly. After the acid has run in the drum for 1½ to 2 hours remove the skins, allow them to drain, horsed up, for at least 24 hours. The longer they are allowed to drain out of the pickle before proceeding with the tanning, the softer will be the finished stock.

NOTE: If, on account of the size of the drum in which the pickling is to be done, a larger proportion of water than 12 gals. to the 100 lbs. of skin is necessary, increase the salt in the ratio of 1/2 lb. salt for each extra gallon of water. The amount of acid to each 100 lbs. of puered weight should not be increased except with great care. If, by chance, the volume of water is increased two or three times, it may then be necessary to increase the Sulphuric Acid by the amount of about 1/2 lb. to each 100 lbs. of stock.

If the skins appear swollen or transparent, more salt is required. If they appear slimy and slippery, as they would when coming from the puer, then more acid is required. When properly pickled the skins should appear white and opaque, and as if they had been alum tawed or tanned.

TANNING:

For each 100 lbs. drained, pickled weight of skins, place in a drum 12 lbs. salt and 10 gals. water, and run the pickled skins in this salt liquor 30 minutes.

Dissolve for each 100 lbs. skins 8 to 10 lbs. TANOLIN in boiling water, using 1 gallon water for every 4 lbs. Tanolin. The best way to effect solution of the Tanolin is to put the proper proportion of water into a barrel and then by means of an inserted steam pipe bring the water to a violent boil. Turn off the steam and dump in the amount of Tanolin to be dissolved. Cover the barrel with burlap and allow it to stand for ten minutes. Then stir the Tanolin solution thoroughly. It will be found in most cases that the Tanolin is entirely gone into solution. If not, the solution may be boiled until the Tanolin is all dissolved. This solution should be cooled to at least 90°F. before using. It is the usual procedure to dissolve the Tanolin some time in advance of its being used, preferably the day before. When it is dissolved the day before the user generally makes up a standard, or stock, solution, of so many pounds of Tanolin in each gallon of liquor, In this way he has a tan liquor of known strength.

To the skins running in the salt liquor in the drum add 1/3 of the total tanning solution and run for 1/2 hour. Then add another 1/3 of the tanning solution and run for 1/2 hour. Then add the last 1/3 of the tanning solution and run the drum for at least 2 hours. Then add, for each 100 lbs. of pickled weight of skins, 1/2 lb. of Sodium Bicarbonate, thoroughly dissolved in a moderate amount of cold water. Add to the skins in the drum and run for 1/2 hour. Then add another 1/2 lb. of Sodium Bicarbonate for each 100 lbs. of stock and run for an additional 1/2 hour. At this point a small piece of the skin may be subjected to boiling water. If it does not shrink or become rubbery, it will be known that the stock is tanned. If it does not stand this test, it will be necessary to give another 1/2 lb. of Sodium Bicarbonate for each 100 lbs. of stock and run for an additional 30 minutes. If the stock will stand the test of hot water at a temperature of 200° without showing any signs of curling, it is perfectly safe to take the skins out and throw them over a horse for

at least overnight, and during this period they will tan still more.

NEUTRALIZING AND WASHING

With a liberal supply of fresh running water, wash the skins in a drum for about 20 minutes and then allow the drum to fill up to the proper float of fresh water before adding for each 100 lbs. of pickled skins 1 lb. Sodium Bicarbonate in two feeds, twenty minutes apart. Run the last feed for at least 30 minutes. Then with a slat door on the drum proceed to wash the stock in a liberal supply of running cold water until free of all acid and salt, which will probably be a matter of 1/2 to 1 hour. From this point on proceed as you desire, either retanning in vegetable extracts or proceed to color by means of the use of analine dyes.

FATLIQUORING

When the skins have been either retanned or colored, they may then be fatliquored in a drum using water at a temperature of 120°-130°F. Approximately 10 gals. of water for each 100 lbs. of skins will suffice and to this is added 3 to 6% Acidolene A. The required weight of Acidolene A is first emulsified by being thoroughly mixed with water at a temperature of 120°-130°F before being added to the skins in the drum. Run in this fatliquor for 30-45 minutes after which the skins may be horsed up to drain and later tacked to dry.

When dry and taken from the board the stock is then dampened and stacked before being seasoned and finished.

VEGETABLE RETANNING

The stock after being thoroughly neutralized and washed may then be considered the same as white or limed stock in so far as the retanning in vegetable extracts is concerned.

With sufficient water to properly float the stock anywhere from 3% to 8% of the desired vegetable tanning extract may be used feeding of course in about 3 portions thirty minutes apart, and then running until the stock shows by test that it has struck through or tanned to the desired extent. Out of this retanning liquor the stock should be horsed or piled down for at least over night before proceeding to finish.

DRUM TANNING OF GOATSKINS WITH TANOLIN

Rapid Method

For each 100 lbs. washed, drained, puered skins, proceed as follows:

1-1/2 lbs. Sulphuric Acid, or 3% Muriatic Acid
10 lbs. Salt
10 gals. Water (temperature 72° to 75°F.)

Run 1 hour. Put on slat door and drain all liquor or haul skins from drum, then replace skins after drum has been completely drained.

Tanning - 10% Tanolin

NOTE: In order to properly cool the Tanolin liquor, it will be necessary to dissolve the dry Tanolin the day before, preferably in a wooden container.

Dissolve the Tanolin using slightly less than one gallon of boiling water for each 10 lbs. of Tanolin. Bring the water to a boil. Then add the dry Tanolin. Cover container and let stand ten minutes. Then stir thoroughly until Tanolin is all dissolved. Allow to cool to at least 80°F. before using.

Run drum containing drained pickled skins for two minutes. Then add all Tanolin liquor. Make certain that all of the Tanolin liquor enters the drum by washing out the feed box and pipe through the gudgeon with a small amount of cold water.

Run 1 to 1-1/4 hours. Then add 3% Hypo dissolved in 2 gallons water for each 100 lbs. stock, and cooled at least to 90°F. Run ten minutes. Then add another 3% Hypo in 2 gals. water and run 15 minutes. Then add another 3% Hypo in 2 gals. water and run 25 minutes. Then add 4 ounces of Bicarbonate of Soda in 2 gallons water and run for an additional 30 minutes. Haul and pile flat for 24 to 48 hours.

After the skins have been piled the requisite number of hours, wash skins in a paddle for 30 minutes, then add 1/2% Bicarbonate of Soda and run 30 minutes. Then follow with a washing for 30 minutes.

Then strike out and shave. Later the skins can be fully neutralized and washed preparatory to coloring.

In place of the use of Hypo in the tan liquor, two feeds of 1% each Bicarbonate of Soda may be given, together with 4 gallons water for each pound of Soda. The use of the Soda will give a light blue color but a still lighter blue can be obtained by the use of Hypo.

SPECIAL NO. 26

CALFSKIN BEAMHOUSE DIRECTIONS

SOAKING GREEN SALTED SKINS

In warm weather soak the skins one day. Then flesh them. Take the weight from the fleshing machine after fleshing for your limes.

SOAKING DRY SKINS

In each 100 gallons of water in the soaks, put 1/2 pound of sulphide of sodium. Soak in this three days. Then flesh and put in fresh soak one day. From the fleshing machine after fleshing, take the weight of the skins for liming.

FIRST PACK: - First Day - leave about 1 ft. of the old lime now in use in the bottom of the pit. For each 100 lbs. of skins add 3 lbs. of lime and 1 pound of sulphide of sodium which has been dissolved. Put in the skins.

Second day - haul out and plunge and put back the skins.

Third day - haul out the skins and for each 100 lbs. of skins add 3 lbs. of lime and 1 lb. of sulphide of sodium.

Fourth day - Allow the skins to lie.

Fifth day - haul and plunge. If the water is very cold warm it to 70°.

Sixth day - haul the skins and put into a pit of water which has been warmed to 80° or 85° F. Unhair at once

from this water and reflesh. In unhairing, wash 5 to 10 minutes in water about 70°F. The skins are then ready to bate. Do not bate them too low.

SECOND PACK: - First Day - put in old lime 24 hours.

Second day - run off the lime to 1 foot from the bottom. Add 3-1/2 lbs. of lime and 3/4 lb. of sulphide of sodium.

Third day - haul and plunge and put back the skins.

Fourth day - add 3-1/2 lbs. of lime and 3/4 lb. of sulphide of sodium.

Fifth day - allow the skins to lie.

Sixth day - handle the same as the first pack on the 6th day.

Handle all packs following the same as the second pack.

BEAMHOUSE WORK FOR HIDES

Soaking Green Salted Hides

Weigh the stock after hide house trimming. The hides should be soaked 24 hours in clean soaks, then washed in a wash mill 10 minutes with cold running water, then fleshed and put back in clean soaks for 24 hours. They are then ready to put in the lime pits.

Soaking Dry Hides

Note: - 50 lbs. of dry hides are considered equal to 100 lbs. of green salted hides.

Weigh the dry hides and put to soak in a pit of cold water to which has been added for each 100 gallons of water 1 pound of single strength Sulphide of Sodium, previously dissolved in a small amount of water. Plunge the liquor well and then put the hides in the water and place heavy weights on top of the hides to force them under the water. Allow them to soak 4 days (96 hours). They are then milled in a dry mill 1 to 2 hours.

Use no water in the mill. The length of time depends on the nature of the hides. Some hides will soften up in 1 hour. Hard hides will require 2 hours or longer. The hides must be milled until soft. When the hides are broken up and soft enough, turn on cold water and wash for 15 minutes. The hides are then fleshed and put into clean fresh water to soak 24 hours. They are then ready to go into the lime pits.

LIMING

For every 100 lbs. of green salted hides
or
For every 50 lbs. of dry hides

First Day - Use 2 lbs. well slacked lime in a pit with sufficient water to cover the hides.

Second Day - Haul out stock and add 2 lbs. of slacked lime and 1 pound of single strength Sulphide of Sodium, previously dissolved in a small amount of water.

Plunge the liquor in the pit and replace the stock.

Third Day - Haul out the stock, add 2 lbs. of lime and 1 lb. of Sulphide of Sodium, as described for the second day.

Plunge the liquor in the pit well and replace the stock.

Fourth Day - Haul out the stock, add 2 lbs. of lime, plunge the liquor well and replace the stock.

Fifth Day - Haul out the stock, and warm the lime liquor to 75°F.

Plunge it well and replace the stock.

Sixth Day - Haul the stock and unhair.

After unhairing on machine or by hand over a beam, put the stock into warm water, 80°F. Then work each hide over the beam for fine hair and also to remove the grease and dirt from the grain. After fine hairing, wash the hides in a wash mill for 15 minutes with a good supply of running water. The hides are then ready for bating.

DIRECTIONS FOR TANNING PICKLED SHEEPSKINS FOR GRAIN OR SUEDE COAT OR GARMENT LEATHER

Degreasing

The usual degreasing pack is one of 25 dozen medium sized skins. For each dozen skins, put in a drum 1 gallon Kerosene. The usual procedure is to run the skins in this degreasing bath for about 1 hour. Then haul and horse before fleshing. This fleshing of the skins after being run in kerosene removes not only the flesh but considerable grease. After fleshing, the skins are put back in drum and run 1 hour, using 1 gallon kerosene for each dozen skins. Then slat for ten minutes. Then, with a tight door on, add for each dozen skins in the drum (4 gallons water at 95 degrees F.) 4 lbs. salt and run drum for half hour. Then put on slat door and slat off liquor for 30 minutes. Then repeat the salt and water wash and again slat it off. Repeat a third time if stock appears to still be greasy and not let out sufficiently. Then proceed to tan.

Tanning

For each 100 lbs. original pickled weight skins, put in the drum 8% Common Salt, and 10 gals. water and run the skins in this salt liquor for 30 minutes. Then dissolve for each 100 lbs. skins 8 lbs. Tanolin in boiling water, using 1 gallon water for every 3 lbs. Tanolin. The best way to effect the solution of the Tanolin is to put the proper proportion of water into a barrel or tank, insert a steam pipe so it will reach to within about 1 inch of the bottom of the barrel or tank, turn on the steam and bring the water to a vigorous boil. Then stir into the boiling water the proper weight of Tanolin, stirring it to insure thorough wetting. Then cover the barrel or tank with a bag or cover, and boil 5 to 10 minutes. Now turn off the steam, remove the cover

and stir the liquor for 5 minutes. The Tanolin will now be dissolved. The solution should be cooled to about 90 degrees F. before using. It is convenient practice to prepare the necessary Tanolin solution the afternoon before the day on which it is to be used as this allows ample time for it to cool over night and obviates the necessity of diluting it with cold water to cool it rapidly for prompt use. Do not put the Tanolin in water and then let it stand before boiling as it will tend to form a semi-solid mass on the bottom of the dissolving receptacle with the result that this mass will then be difficult to dissolve readily even with vigorous boiling.

After Tanolin is dissolved, add enough cold water to the Tanolin solution to make 10 gallons of tan liquor for each 100 lbs. of skins in the drum.

Take one-third of the Tanolin solution, add to the contents of the drum and run drum 1/2 hour. Then add another one-third of the solution and run drum 1 hour. Then add the last third of the solution and run drum 2 hours. Then add for each 100 lbs. stock in the drum 3/4 lbs. Soda Bicarbonate, thoroughly dissolved in a small amount of water, and run the drum 1 hour. Then add another 3/4 lbs. of Soda Bicarbonate for each 100 lbs. stock and run at least one hour before testing to see if the skins are tanned.

When the skins are tanned, they should be horsed up smooth to drain for 24 hours. If there is not sufficient time in the afternoon of the day upon which the tanning has been started to run the skins sufficiently after the soda is added, it is better to let them lie over night and add the soda the following morning after first running the drum with its load for 30 minutes.

If the stock is completely tanned, a piece cut off from the thickest part should stand boiling. If the piece cut off shrinks materially and

becomes hard upon boiling, the stock is not tanned and should be thrown back into the tan liquor and milled until it will stand boiling. If the Tanolin is all exhausted, which will be shown by the liquor being almost colorless, one pound of Tanolin per 100 lbs. of stock should be dissolved in 2 to 4 quarts of water and added to the drum. Be sure the stock is completely tanned by leaving it long enough in tan liquor to make certain. There is no danger of over tanning the stock by leaving it too long in the Tanolin.

Neutralizing and Washing

The stock is then thrown into a drum and washed with a liberal supply of fresh running water for about 20 minutes. The slat door is replaced by a tight door and 12 gals. of water per 100 lbs. of skins put in the drum. Then add through the hollow axle for each 100 lbs. skins in the drum 1 pound Bicarbonate of Soda, or 2 pounds of Borax dissolved in a little water. Run the drum for 30 minutes. The slat door is then again put on and the stock allowed to wash in a liberal supply of running water until free from all acid and salt, which will probably be in about 1 hour.

To Suede: After skins are fully neutralized and washed, they are then drained as dry as possible before being given about 30 to 40 quarts of fine powdered pumice for each 25 dozen skins. Run for 1 hour. Then press or wring to remove all pumice before proceeding to stain and fat-liquor according to directions.

Staining and Fat-Liquoring

With sufficient water, temperature 120 degrees F. to properly float the skins, there is then fed into the drum for each 100 lbs.

skins 2% to 4% Stainless Sumac dissolved by boiling, using 3 gals. water for each 100 lbs. skins and cooling to 150 degrees F. The stock is run in this sumac solution for 45 minutes. Drain off enough water so that there is approximately 10 gals. of water per 100 lbs. of stock kept in the drum. Then add the fat-liquor made up of 5 to 7% Acidolene No. 113 for suedes or Acidolene N for grains with 5 gallons of water per 100 lbs. stock (about 140 degrees F.). The fat-liquor emulsion should be about 130 degrees F. when ready to use. Run in the fat-liquor for about 45 minutes. The skins are then horsed up to drain, then put out and later hung to dry. When dry, they are dampened, either by means of a very fine spray of water or by piling in moist sawdust for a few hours. After which they are piled and covered with burlap or similar material for 24 hours in order to properly temper the stock. They are then dry milled for approximately 1 hour. Then machine staked. In order to properly open out the flanks, shoulders, etc., the skins at this point may be given a light knee staking.

Coloring

The skins are wet back by running in plenty of water of about 100 degrees F. and when thoroughly wet back are given a small amount of ammonia, about 4 quarts for the usual color load of 25 dozen, or 600 lbs. wet weight, together with 1% Monopole soap. Run in this ammonia liquor for about 45 minutes in order to remove all excess of oil and soap on the grain of the stock so that it will take the color clearer. Out of this ammonia liquor wash in warm water for about 60 minutes to remove all traces of ammonia. Then dye as desired.

For Suedes: When skins are dyed to the desired shade, they can then be given a top fat-liquoring with a small percentage of egg yolk with or without ochre depending on success in dyeing to shade. For grain

leather after dyeing make use of a small percentage of Acidolene N.

After horsing for a few hours, the skins are then struck out and hung to dry. When dry, they are dampened as before, then dry milled. After dry milling the skins are then staked or blocked on a Slocumb Machine with a special emery block replacing the usual fibre plate. The skins are then again faced on a dry wheel after which they are finally blcoked on the Slocumb Machine.

GOATSKINS FOR GARMENT LEATHER

After leather is tanned for glazed kid or linings, shave but do not shave too close. pH 4.1 -

For each 100 pounds Shaved Weight -

Wash the stock in a drum with running water 80° for 15 minutes, then drain. Dissolve 3% Borax in 5 gallons Water 85° - run on stock, run 30 minutes, pH 6.8 -

Add - 2% Formaldehyde in 2 gallons water 90° - run for 45 minutes.

Add - 5½% Salt and 1% Formic Acid in 4 gals. water 85° - run 20 minutes, pH 3.9 -

Add - 4% Tanolin R in 2 gallons Water 90°- run for 1 hour. pH 3.7

Add - 1% Bicarbonate in 4 gallons Water 90°- run for 1 hour, pH 4.3

Wash in drum with running water 90° for 25 minutes, and for five minutes at 120° - then drain. pH 4.6 -

Mix 2% Sumac Extract in 5 gallons water at 100°, run 10 minutes.

Add - 3% Meyes and Gregg Fat-liquor Soap, (Philadelphia, Pa.) Boil in 2 gallons water until dissolved, add 3 gallons cold water and add to this Soap solution 8% Acidolene 514, heat to 150° and add to drum and run for 20 minutes.

Add - 2% Albacil CS-75 in 5 gallons Water at 150° - run for 20 minutes, then horse up over night, set out on flesh and hang to dry. pH 5.0. The stock after drying is staked dry and then wet back for coloring. For each 100 lbs. shaved weight, wet back in drum with 25 gallons water to which has been added 10 ozs. Ammonia, run for 30 minutes. Then drain and proceed with coloring. No additional fat-liquor is needed. After coloring, set out on flesh and hang to dry. When dry proceed with the finishing coats, usually three spray coats, then ironed on mangler, then milled for 3 hours. The stock is then toggled not too tight. Steam the drum for one minute each hour during milling.