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## Circular No. 80 - Domestic Slaughtering, Cutting, and Curing of Pork

Harry H. Smith

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# Domestic Slaughtering, Cutting, and Curing of Pork

HARRY H. SMITH



Fig. 1.—Showing proper method of sticking, which is easy and humane as well as insuring a good bleed.  
(Courtesy, Colo. Agr. Ext. Serv.)

Agricultural Experiment Station  
Utah State Agricultural College

LOGAN, UTAH

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# DOMESTIC SLAUGHTERING, CUTTING, AND CURING OF PORK

HARRY H. SMITH

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The practice of slaughtering hogs on the farm is being followed rather extensively by the farmers of this state. It is an economic practice and should be more generally followed because by this practice a supply of meat is available throughout the year. In all ages meat has been the principal article of diet of the ruling races. It is a natural and necessary part of man's diet. The races of people who have not included meat in their diet are today numbered among the weaker and more backward nations.

The extensive use of meat is due to its palatability and to its high nutritive value. The fats and proteins of meat are highly digestible. Woods<sup>1</sup> states that protein is practically 100 per cent digestible and fat 96 per cent digestible. He further states that the compounds contained in animal food are very much like those of the human body and, therefore, need but little change before they are ready for use. Meat is not only rich in highly digested protein and fat, but it is also rich in minerals, especially iron and phosphorus which are necessary elements in the human body. Meat is also a source of vitamins; apparently it supplies them in adequate amounts. This is well shown by the diet of the Esquimaux as well as by the explorers, Amundsen and Stefansson, both of whom with their respective parties lived for more than two years in the polar regions and subsisted entirely on meat and had excellent health.

The preparation of meat on the farm for home use is not the difficult task that many are prone to think. The slaughtering of hogs and

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<sup>1</sup>Woods, C. D. Meats: Composition and Cooking. U. S. Dept. Agr. Farmers' Bu'. 34 (1896) pp. 15-16

the curing of meat are relatively simple tasks, and with a very little practice one can perform them quite efficiently.

Another advantage of home slaughtering is that this particular work comes at a time of year when other kinds of work on the average farm are slack. Not more than two days' time need be spent in preparing a year's supply of meat.

It is the purpose of this publication to give in as clear and concise way as possible directions which will aid the beginner in preparing pork for home use. There are other good methods of slaughtering, cutting, and curing meat. The author has tried many of the various methods, but has found the ones here described to be most satisfactory.

## SLAUGHTERING

**Tools and equipment necessary.**—For efficient and rapid work it is essential to have proper and sufficient equipment. This equipment need not be elaborate. The essentials are a good butcher knife, a 14-inch steel, a 22- to 26-inch saw, two candlestick scrapers, a hog hook, gambrel, a thermometer, a vat or barrel in which to do the scalding, and a platform on which to do the scraping.

In selecting a butcher knife one of good material should be chosen. If the knife is to be one for all-around use a 6-inch skinning knife is recommended. For the beginner, this knife is preferred for sticking, as there is little danger of sticking the shoulder. A knife with an even curve should be selected rather than one with a shoulder close to the point.

A steel is useful in keeping the knife sharp. The steel chosen should be smooth rather than a rough file-like steel. The purpose of the steel is to keep a smooth, keen edge on the knife, and a rough file-like steel will not do this.

The ordinary candlestick scraper which can be bought at any hardware store is convenient for removing the hair. If such a scraper is not available, an old hoe or beet knife makes a good substitute.

The hog hook is convenient in handling the hog while being scalded. The hook part should be about 6 inches long; the shank should be about 12 to 14 inches in length; and the handle, which should be made of hard wood or gas pipe, should be about 16 inches long so that two men can use it. The hooks used in handling bales of hay may be used in case the above hook is not available. However, the hog hook can be made by any blacksmith.

Gambrels may be made either of wood or of iron; they may be either bought or homemade; in fact, a single tree makes a satisfactory gambrel, as there is no danger of the carcass slipping off.

A thermometer, while not absolutely necessary, will be helpful as it eliminates all guess work as far as the temperature of the scalding water is concerned. A vessel for scalding is necessary. A barrel is often used for this purpose; an ordinary steel tank, the kind ordinarily used for watering stock, is also often used. One advantage of the latter is that the water in the tank is easily heated, either by raising it off the ground and building a fire under it or by setting it over a trench. A

convenient-sized tank for this purpose is one 2 feet wide, 2 feet deep, and 6 feet long.

A platform on which to scrape can be made by laying some planks or an old door on some saw horses. Such a platform should be about 40 inches wide.

**When to slaughter.**—Generally speaking, slaughtering in Utah should be done during the winter months or at any time when it is cool enough to insure cooling out of the carcass.

**Selection of animal.**—The hog to be selected for home use should be in a healthy and vigorous condition and should be gaining in flesh at the time it is killed.

**Size.**—An animal weighing from 220 to 235 pounds is most suitable from the standpoint of size. It has then matured enough to have good, firm flesh and it is not too large to cool out well. A common mistake is made in attempting to slaughter hogs so large that it is difficult to cool their carcasses out well. This one thing accounts for much of the spoilage which is experienced in curing meats on the farm.

**Condition and quality.**—An animal in average condition will usually be the most suitable, unless a large amount of lard is desired. A hog with smooth, even covering, of firm flesh, and with a bone which lacks coarseness, and with a trim underline will give meat of the most desirable quality.

### CARE OF ANIMALS BEFORE SLAUGHTERING

For 24 hours previous to slaughtering the animals should be given no feed, although they should have access to plenty of water. If it is necessary to remove the animals to a different pen before slaughtering, this should be done soon enough to give the animals time to rest. Meat from animals killed while in an exhausted condition does not keep well because the animals will not bleed out. Care should be taken to see that the animals are not beaten or bruised. A bruise from a club or whip will show up on the carcass and will render that part of the carcass unfit for curing.

### KILLING

On the farm hogs are often shot with a small caliber rifle and then stuck. This practice is recommended, especially where only one man is doing the slaughtering. Another practice sometimes used is that of stunning the animal by hitting it on the head with a hammer or an axe. This latter method is generally brutal, and from the human standpoint cannot be too strongly condemned because, due to the shape of the hog's head, it is seldom that a good job of knocking can be done.

The method of killing hogs commonly practiced in the slaughter houses is to hang the hog up by the hind leg and then stick it, letting it bleed to death. If two men are doing the killing this is probably the best method to use on the farm, although the hog need not be hung up. The sticking can be done well where one man holds the hog on its back on the ground. The one holding the hog should stand astride



Fig. 2.—Showing proper way of splitting hog. (No danger of cutting fingers or intestines.) (Courtesy, Colo. Agr. Ext. Service)

the animal's body, holding it by its front legs. The one doing the sticking puts his hand firmly on the hog's chin and pushes it toward the ground. The knife is taken in the other hand, care being exercised to keep the edge down throughout the operation. A slit is made just in front of the breast bone. The knife is then pushed toward the backbone, allowing the point to project slightly under the breast bone, with the point of the knife cut forward. The depth of the thrust will have to be determined by the size of the hog; for a 225-pound hog not all of the blade of a 6-inch skinning knife will be necessary. While there is little danger of sticking the hog in the shoulder if a skinning knife is used, the animal should be held squarely on his back at all times and the knife should always be kept parallel with the backbone (no attempt should be made to cut crosswise.) It is undesirable to stick the heart; if the muscular action is interfered with the heart stops beating and does not force the blood from the smaller veins which should be thoroughly drained.

### SCALDING AND SCRAPING

If the scalding is done in a barrel, the temperature of the water should be between 160° and 165° Fahrenheit. Care must be taken not

to set the hair, which is likely to result with water at this temperature. It is thus advisable to keep the hog moving and to try the hair frequently to see if it is coming loose. If water of lower temperature is used and the day is cool, it is likely to get too cold before the job is completed. As the head is the most difficult part to clean, it is best to scald it last so that work can be started on the head as soon as it comes out of the barrel. If a tank, which has a fire under it so that the temperature can be controlled, is used a temperature of from 145° to 150° F. is preferable. This gives a slower scald. There is little danger of setting the hair. The animal should be entirely immersed. There is no need of moving the animal while it is scalding except to turn it over a couple of times so that all parts will be equally scalded. When the hair comes off of the jowls and feet easily, the animal is ready to be taken from the tank.

Since the head and legs are the most difficult to clean these should be worked on first. In scraping the body, it will be found that the hair will come off more easily if the scraping follows the direction of the hair. The bell scraper is tilted on the farther edge and drawn toward the person scraping. Some hogs have considerable scurf on the skin and this can be removed by using a bell scraper and plenty of hot water. There is some evidence that the skin cleans more easily if some lye or wood ashes are added to the scalding water. However, the addition of lye or wood ashes has not always proved beneficial. In the large packing houses this material is put in the scalding tank.

### HANGING

After the hog is well scraped it is ready to be hung. It is hung by inserting a gambrel under the tendons of the hind leg. The tendons are freed by cutting into the hind leg on the back side just between the dew claws; the cut should be made deep and well to the hock. The knife must be kept parallel with the leg in order not to cut across the tendons. Both tendons are used as one may not be strong enough to hold, especially if the hog is large. The hog is hung with the nose 4 to 6 inches from the ground.

A sharp knife is used to shave off any remaining hairs. The body is then washed off with warm water, which is scraped off with a dull-edged scraper. Cold water is then used to rinse the body, scraping dry with the back of a knife.

### EVISCERATING

The knife should be merely inserted, edge down, in the opening made by sticking and the cut made to the joint of the under jaw; the knife should then be reversed and a cut made up through the breast bone. In young animals little trouble is met in cutting through the breast bone. In older animals it is usually necessary to cut to one side of the center, where the bone is softer. Care must be used not to cut into the stomach which lies just at the top of the breast bone.

The knife is next placed between the hind legs and a cut is made



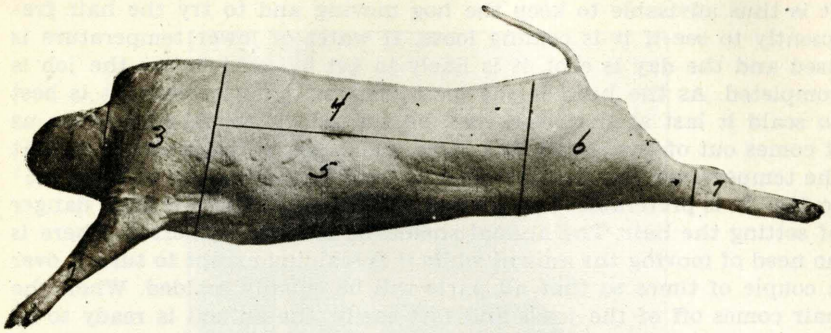


Fig. 3.—1, Jowl; 2, front shank; 3, shoulder; 4, loin and fat back; 5, side or bacon piece; 6, ham; and 7, hind shank.

down to the pelvic bone. In the case of a barrow, the penis should be stripped out, care being taken not to cut too close at the opening of the sheath as there is a large gland at this point which is filled with a foul-smelling liquid. After stripping out the penis, it should be left attached to the entrails. An opening, large enough for the hand to be inserted, is made in the abdominal cavity immediately below the pelvic bone. The knife is grasped with the thumb toward the blade; with the handle of the knife, the hand is then inserted into the abdominal cavity the point of the knife being outside and pointing slightly downward. It is now possible to open the body without any danger of cutting either fingers or intestines, by pushing the knife quickly down the middle of the belly. The intestines are allowed to roll down and hang, as they will not fall out while completing the work. A cut is made through the pelvic bone. This is not difficult to do if made through the cartilage, which is in the exact center, although care must be taken not to cut through the large intestine which lies just back of it. The knife is now grasped so that the thumb is up and the point down; with the other hand the penis or uterus, as the case may be, is grasped, giving a steady pull, while with the knife a cut is made around both sides of the colon (large intestine). The colon lies very close to the back bone; thus, great care must be taken in cutting it loose to see that it is not cut. It is stripped past the kidneys, care being taken not to tear the kidney fat. The intestines are held on the left arm; with the right hand the stomach is rolled out and the gullet cut at the point where it goes through the diaphragm. The intestines are now dropped into a tub or on a table. The liver is loosened, cutting it free, and carefully removing the gall bladder.

The diaphragm, the membrane which separates the organs of the thoracic cavity from those of the abdominal, is then cut free from the ribs at a point where the connective tissue or white membrane joins the lean muscle of the diaphragm. The heart and lungs are now cut out. The inside of the ribs is washed with cold water and wiped dry.

The leaf fat is loosened; this is not difficult at this time and helps that part of the carcass to cool.

If the hams are thick it is advisable to face them at this time as it helps them to cool. This is done by cutting a 2-inch strip of fat from the inside of the hams, beginning at the flank and ending at the tail.

### REMOVING THE HEAD AND SPLITTING THE CARCASS

It is easier to remove the head while still warm than it is to remove it after it is cool. There are two common methods of removing the head: One method is to cut the head off square, beginning just back of the ears and cutting around to the throat. The other method is to cut down just back of the ears, skinning the head out and leaving the jowls on the carcass. When the carcass is cut up, by using this latter method, there are two squares of bacon from the jowls, known on the market as "dixie squares". Unless one has had considerable experience in using a cleaver or an ax, a saw is necessary for splitting the carcass.

### CHILLING

It is important that the carcass be well cooled. **Failure to cool the carcass well before putting the meat down to cure is one of the principal causes of spoiling while in cure.** A common mistake is to allow the carcass to freeze. If freezing takes place only on the outside of the carcass the cooling of the inside is retarded. If the carcass is allowed to freeze solid and is then put into cure, either while frozen or after it has thawed, it does not take the cure so well. This is because the curing agents enter the meat by capillary attraction. Freezing breaks down these little capillaries or tubes. With these tubes broken it is difficult for the brine to enter the meat; danger of spoilage is also greatly increased. To become thoroughly cooled the carcass should hang for 24 hours or longer, if necessary, at a temperature of from 33° to 34° F. Cold meat is also easier to cut. It is almost impossible to satisfactorily cut a warm carcass.

### CUTTING AND TRIMMING

In cutting up a carcass there are several methods that may be used. The method herein described is one which many packers have found more satisfactory and one which has also been found desirable for home use. The aim of any method of cutting should be to get the carcass into suitable sized pieces with little waste. At all times trimming should be done with the idea of leaving the piece full and plump.

**Ham.**—The first cut is made by cutting the hind shank off about an inch or an inch and a half above the hock. The ham is removed by cutting through the center of the sacral arch or about 2½ inches in front of the pelvic or aitch bone, the cut being parallel with the cut made in cutting off the hind shank.

The ham is given proper shape by trimming off surplus fat, leaving it full and plump. If there is considerable outside fat it should be



Fig. 4.—Showing shoulder cut between third and fourth ribs.  
(Courtesy, Colo. Agr. Ext. Service)

trimmed off and used for lard. At least  $\frac{1}{4}$  inch of fat should remain on the piece.

**Shoulder.**—The shoulder should next be removed by cutting across the third rib and perpendicularly to the general median line of the body. This may vary, depending on the size of shoulder wanted. If the jowl has been left on the carcass it is removed, the cut being made parallel to the other side of the shoulder. The ribs in the shoulder and the neck bones should be carefully removed, care being taken not to cut too deep into the shoulder. The top of the shoulder should be squared up and the rough edge over the arm at the neck and in fore flank of the shoulder now trimmed off. If the shoulder is exceptionally fat, the fat should be trimmed off and used as lard. If the shoulder is from a large hog, if cut in two it will facilitate curing. The cut should be made through the middle and parallel to the top. All bloody spots, which are sometimes found at the point where the vein enters the shoulder, should be removed.

The shank should be cut off about 1 inch above the knee.

**The middle piece.**—The middle piece contains the ribs, bacon slices, loin, and fat back. To remove the loin, the saw is set so that it is about 2 inches from the backbone on the first rib; the saw is then run to the edge of the tender loin muscle at the ham end. The fat back is removed, leaving about  $\frac{1}{4}$  inch of fat on the loin (Fig. 3). The fat back is used for lard.

The ribs, which are removed by cutting under them with a knife, are removed as spare as possible. For cooking they are cut into suitable lengths with a cleaver.

The bacon piece is flattened with a cleaver and is squared by trim-

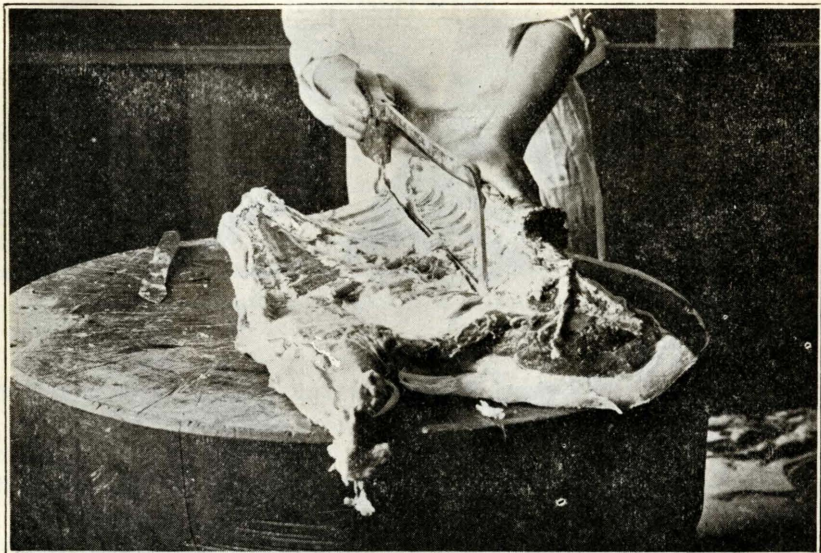


Fig. 5.—Taking loin from lean meat. Cut from arch in ribs to end of small tenderloin muscle at ham end.

ming the edges. A strip, wide enough to remove the mammary glands, is taken from the bottom side.

**The head.**—The head should be split and the brains removed. The meat, which should be trimmed off as closely as possible, may be used for sausage and lard or for making head cheese. Some follow the practice of removing the brains and that part of the jaw bone which contains the teeth; the remainder is then cooked until the meat is easily separated from the bones, the meat being used for head cheese. It is not advisable to cook the bones of the upper part of the head since there are many air passages in the frontal bones, most of which contain mucous and sometimes infection; as it is impossible to clean these bones, they should be discarded. As most of the meat can be trimmed off, little is wasted.

### CURING

The curing of meat is a practice which has been followed for many centuries. Primitive methods consisted of drying and smoking. These methods are still practiced. At the present time, however, curing is made more effective because of wider knowledge of chemical substances, such as salt, sugar, saltpeter or potassium nitrate, and water. It is often believed that the curing of meat is a difficult process and in order to produce a satisfactory product much practice and skill is required. However, such is not the case; all that is required is ordinary care in following certain simple rules and practices.



Fig. 6.—Taking off the fat back

Inquiry leads one to believe that much more meat is consumed on Utah farms than is cured or even produced there. Many farmers follow the practice of selling on the market all the animals which they produce. The meat which they eat they buy locally, usually at prices which seem high when compared to the cost of production. If each farmer were to cure his own meat he would have available at all times, at a cost which would not be prohibitive, a supply of one of the most important food products.

#### Methods of Curing

There are two principal methods of curing: (1) The "brine method" and (2) the "dry method". The former is usually recommended for farm use. In using the latter method cool cellars with a fairly low, evenly-maintained temperature are imperative. Meat cured by the dry method has a tendency to become too dry. However, dry-cured meat, since it is drier and for the most part more delicate, possesses better keeping qualities after the process of curing is completed. Meat cured by the dry method loses 10 to 15 per cent in weight. Cured by the brine method, meat gains 5 to 15 per cent in weight. As a finished product dry-cured meat presents a better appearance. For this reason many packers combine the two methods, placing their meat (especially the bacon) first into brine for the first half of the curing process. During the last half of the curing process the meat is put into dry cure. This gives bacon a firmer and somewhat superior appearance, and it probably has slightly better keeping qualities.

### Important Factors

In curing meat only a few things need be taken into consideration in order to insure a first-class product.

**Sound meat.**—Blood is one of the best media for bacterial growth. Meat from animals which are not well bled has a tendency to spoil quickly, and animals which are exhausted before killing usually do not bleed well. Meat from animals which are sick from any cause whatsoever should not be used for human food, even though it is possible in many cases to cure the meat. For this reason the carcass and viscera should be closely inspected at all times for signs of disease.

Meat which has been kept until it is tainted is not fit to cure and is almost sure to spoil.

Meat readily takes up flavors; therefore, it should never be stored where there is either gasoline or volatile drugs.

The cooling must be thorough. If a piece of meat not thoroughly cooled is put into cure, gases work out from the warm spot in the center and thus prevent the cure from entering the meat.

Meat spoils because of the growth of bacteria. Bacteria reach the meat through the air, but soiling and moisture assist in their growth. Therefore, anything which hinders the growth of bacteria helps to preserve the meat.

**Chemicals used and the effect of each.**—Usually the effect of chemicals is to remove water and meat juices and thereby arrest bacterial growth. Those most commonly used are salt, sugar, saltpeter, water, and sometimes soda. There are other chemicals which will preserve meat, but their effect is injurious to health; therefore, their use is prohibited by federal law.

Salt is the most important chemical in curing. Salt is astringent in character; it contracts the muscles, withdraws the water and meat juices, and enters the meat. Internally, it prevents the working of bacteria; externally, it shuts out the air and changes the muscle meat from a reddish to a grayish color. It also has a tendency to harden the meat.

Saltpeter or potassium nitrate gives a reddish color to the muscle, thus offsetting the tendency of the salt to give a gray color to the meat. When used in large quantities, it is considered harmful, but when used in the amounts ordinarily recommended for meat curing it is entirely harmless.

Sugar has very little curative power but is used mainly for its flavor and its ability to overcome the hardening effect of the salt.

Water is used in the brine cure only as a solvent for the above ingredients.

In the making of corn beef, soda is sometimes added in small amounts.

**Vessels in which to pack.**—Curing by the brine method requires a suitable vessel in which to cure the meat. If it were not for the danger of breaking, a stone jar would be the best vessel in which to cure meat; because of its glazed surface, easy cleaning is possible.

The vessel which is in most general use is the hardwood barrel. No barrel which has contained gasoline, kerosene, cylinder oil, or similar materials should be used for packing meat as thorough cleaning is practically impossible. If the barrel is not cleaned thoroughly the meat will be tainted. Molasses and vinegar barrels can be easily cleaned and are generally used. They should be thoroughly scrubbed and then scoured with boiling water.

A cool cellar with an even temperature and which is well-ventilated is probably the best place in which to do the curing.

### Recipes for Curing

The following recipes for curing 100 pounds of meat are recommended:

Sugar Cure		Plain Salt Cure	
Water .....	4 gals.	Water .....	4 gals.
Salt .....	8 lbs.	Salt .....	8 lbs.
Sugar .....	2½ lbs.	Salt peter .....	3 oz.
Salt peter .....	3 oz.		

Both brown and granulated sugar are used. Some prefer the brown sugar because it is thought to impart a better flavor. Granulated sugar is always used by the packers because it is purer and does not have a tendency to cause the brine to spoil.

There are many other satisfactory recipes. Most of them, however, are variations of these. After some experience one can make such variations as meet the individual tastes.

### Brine Curing

**Making the brine.**—The ingredients should be thoroughly mixed, after which the water is added, and then boiled until the mixture is dissolved; any scum should be skimmed off. It is advisable to make the brine the day before it is to be used, thus insuring its being cold (not above 40° F.) at the time it is put on the meat.

**Packing the meat.**—A little salt is sprinkled on the bottom of the barrel. Each piece of meat is rubbed with salt as it is put down. The hams and shoulders are packed first with the bacon on top. The pieces are packed as closely as possible.

The brine should be poured down the side between the meat and barrel rather than down on the center of the meat. In pouring the brine down the side all the air is forced out, while if poured down the center it is possible to trap the air between the pieces of meat. The pieces should be packed with the skin side down, except the last piece which should be placed with the skin side up. The meat should be weighted to prevent it from floating when the brine is poured on. For weighting, a piece of hardwood or hard burned tile or brick should be used; **limestone or pine should never be used.**

If the amount of brine is not sufficient to cover all of the meat, additional brine of the same strength should be made up.

On the seventh day the meat should be taken from the barrel and repacked. This will insure a more uniform cure. The same brine should be put back unless it is ropy or sour, in which case new brine must be made. The meat should be replaced for the second time on the fourteenth day.

While the meat is in the cure, the brine should be closely watched at all times to see that the brine does not spoil. If any tendency to ropiness in the brine is noted, the meat should be removed and washed with a brush and warm water. The brine may be reused if it is boiled and skimmed; however, it is safer to make new brine. The barrel must be thoroughly washed and scalded with boiling water.

**Time to leave in the cure.**—If hams and shoulders, weighing from 15 to 20 pounds, are to be kept through the summer months, they should be left in the brine about 3 days to the pound. If they are to be used before hot weather sets in they may be given a lighter cure. If hams or shoulders weigh more than 20 pounds it is advisable to trim them down to that weight. It is inadvisable to cure pieces weighing more than 20 pounds.

Sides of bacon weighing 10 pounds require 20 days to the pound. Pieces weighing 13 to 15 pounds require 2½ days to the pound.

### Dry Curing

The method for dry curing is the same as for brine curing except that the ingredients, which are well mixed, are put on dry. One-third of the mixture is rubbed on the meat at the time of curing; on the third day the second third of the mixture is rubbed on, and on the sixth day the last third is rubbed on. It is advisable to repack again on the fourteenth and twenty-first days. The meat should be pulled apart and each piece rubbed well with the mixture. In dry curing, meat may be piled on a table or bench to remain until it is cured. If the hams are rather large it is advisable to push some salt in around the hip joint. The length of time required for the dry-curing method is the same as for the brine-curing method, viz., 3 days to the pound for hams; 2 days to the pound for 10- to 12-pound sides of bacon; and 2½ pounds for 13- to 15-pound sides.

### HANGING

After the meat has been in the cure for the required length of time it should be taken out of cure and washed first in hot water and then in cold water. A brush is used in the washing. The meat should be strung with stout cords and hung up to dry for 24 hours. It will then be ready to smoke. The pieces are hung so that they do not touch. If two pieces touch there will be a spot on each piece which will not be smoked.

### SMOKING

Meat is smoked for three reasons: (1) The flavor of the meat is improved; (2) smoke deposited on the meat aids in preserving it by destroying bacteria and repelling any insects which might be attracted



to the meat; and (3) during smoking the temperature of the meat is raised, thus drying out the moisture; the water content of the meat being lowered, its keeping value is greatly increased.

**Woods used for smoking meat.**—There are several woods which may be used for smoking meat. In certain sections where hickory wood is plentiful this wood is generally used and often in the green stage. Hickory is supposed to impart a particularly desirable flavor, although this idea is largely notional. Packers have never made a practice of using hickory wood, either green or seasoned, exclusively for smoking meat but have generally used a mixture of hardwoods for this purpose. The practice among packing houses now is to use **hardwood sawdust**, which is obtained from sawmills located in the hardwood sections of the middle and eastern states. Sawdust is used because the fire can be much more easily controlled. It is necessary to have a slow, smouldering fire. Some of the softer woods are also suitable for smoking meat. Cottonwood, aspen, and willow are among the woods which are very desirable for this purpose. The two principal hardwoods which are among the best for smoking meat and which can be obtained in almost any section of the west are the maple tree and the apple tree. Corn cobs are also satisfactory to use for smoking and are said to impart a flavor to the meat which is similar to that obtained from green hickory wood. However, neither pine nor any of the resinous woods should be used as they impart an unpleasant flavor to the meat.

Meat should be smoked with a slow smouldering fire of even temperature. The fire should not be allowed to blaze up as the meat may become too warm, thus causing it to be unevenly smoked.

Meat should be kept in the smoke until it has a good straw color, which requires from 30 to 35 hours. The smoke will penetrate more easily and the meat will have a better color if the smoking is carried over for two or three weeks, smoking it for 2 hours a day until the proper amount of smoke has been obtained.

**Methods of smoking meat.**—On many farms the smokehouse is a permanent structure, but on some farms there is no place available for smoking meat. If meat is to be cured annually it would be economy to construct a suitable place for the smoking of meat. The size of a smokehouse is determined, of course, by the amount of meat to be smoked. It should be constructed so that the meat will hang at least 7 feet from the fire. It is also advisable to place some wire netting under the meat to prevent its getting into the fire in case any of it falls. There should be some provision made for ventilation in the roof so that too much warm air will not collect around the meat. This is especially important where the smoking is continuous.

Where only a small amount of meat is to be smoked the construction of a temporary structure may be advisable. There are several ways in which this may be constructed. If a bank 5 or 6 feet high is available, it is not difficult to construct a contrivance for smoking the meat from two or three hogs. By placing a large box on top of the bank with a fire below, and leading the smoke up through a stove

pipe to the box, the meat can be smoked satisfactorily. If an old stove is available it might be used for holding the fire.

If such a bank is not available, a large box may be set up on four poles which have been set in the ground and well-braced. A fire can be put in an old stove and led up to the bottom of the box by a few joints of stove pipe. Holes should be bored in the cover of the box to increase the draft and provide ventilation.

### **PATENT PREPARATIONS FOR CURING MEAT**

There are on the market several patent products for curing meat. Some of these products undoubtedly have merit. The use of most of these products is prohibited in federal-inspected packing plants.

In a letter recently received from A. J. Pistor, Acting Chief of the Meat Inspection Division, U. S. Bureau of Animal Industry, attention is called to the use of so-called liquid smoke and similar substances in the preparation of cured meat. The use of such products is prohibited for two reasons: (1) These products often contain substances which are not permitted to be added to meat and food products and (2) their use is deceptive because there is a tendency for them to have the appearance and flavor of smoked meat.

There are on the market at the present time two kinds of "smoked salt" for use in curing meat. One is made by mixing liquid smoke with salt. If there is any objection to the use of liquid smoke, then this product would come in for the same criticism. There is no doubt that meat cured properly with this product will keep. It is, however, not smoked meat, nor would it seem to have the keeping qualities of smoked meat since no heat has been applied to dry out the meat, as is done when natural wood smoke is applied.

The other salt is made by a different process. In the manufacture of this salt, the salt is actually smoked by hickory wood, no liquid smoke being used in its preparation. The writer of this circular has used this kind of smoked salt several times and has found it satisfactory. Meat treated with it has the taste and smell of meat which has been smoked. Since nothing injurious has been added to the salt to give the meat a smoked appearance and taste, there should be no objection to its use. However, meat treated with smoked salt is not genuine smoked meat and should not be sold as such.

### **KEEPING CURED MEAT**

After curing is completed, it is often a problem of how to store the meat. Several methods are used. Probably the most common practice is to hang the meat in the smokehouse. If the smokehouse is well ventilated and the windows and openings are tight and screened this method proves satisfactory, except that in arid sections meat has a tendency to lose its moisture and to become dry and hard. This can be largely overcome by wrapping the meat in paraffined or oiled paper and covering it with muslin bags.

This tendency of meat to dry out can be still further retarded if, after wrapping in paraffined paper and enclosing in muslin bags, a

coat of yellow wash is applied. The formula for making yellow wash for 100 pounds of meat is as follows:

Barytes (barium sulphate) .....	3 lbs.
Glue .....	1 oz.
Chrome yellow (lead chromate) .....	1¼ oz.
Flour .....	6 oz.

A smooth, gravy-like thickening of the flour is made, finally adding enough water to make a gallon and a half. The chrome yellow is dissolved in a separate vessel, adding this solution and the glue to the flour. The whole is then brought to a boil and the barytes added, stirring constantly. The mixture is used cold. While using it should be stirred frequently and applied with a brush. The meat is hung so that the pieces do not touch. **It should not be stacked in piles.** Well-cured meat, when packed in this manner, should keep indefinitely.

Where meat is wrapped and put in bags, the strings, which were used to hang the meat while it was being smoked, should not be left sticking through the top of the sack to be used again, as this affords an entry to the meat by insects which can crawl down the string. If a string by which the meat is to hang is tied around the mouth of the bag with a slip knot, the mouth of the bag will be tightly closed and there will thus be little opportunity for insects of any kind to enter.

### SAUSAGE MAKING

All lean trimmings should be used for sausage. Pork sausage should be about one-fourth fat and three-fourths lean.

The following recipe is one which has proved satisfactory:

Meat .....	5 lbs.
Salt .....	5 tsp.
Sage .....	3 or 4 tsp.
White or black pepper .....	2 tsp.
Add other seasoning to taste	

Sage bought at stores differs in its strength. If sage seems fresh, 3 teaspoonfuls will be sufficient. Some objection is made to the use of black pepper because the little black grains are visible on the fat. The meat should be cut in pieces of the proper size to go through a sausage mill, weighed, and the seasoning spread over it. If the seasoning is added in this way before grinding, one is more certain to get an even mixture; however, the seasoning may be mixed in after the meat is ground, although it is more difficult to get a uniform mixture. This is what is known as fresh meat sausage and has poor keeping qualities; therefore, it must be used a short time after being made.

If one desires to keep it for a month or 6 weeks, the sausage should be fried until a little more than half done; it should then be packed in small stone jars; while it is still hot, it should be covered with hot lard which is a little below the boiling point. Then it is ready to set away to cool, after which it is stored in a cool, dry place.

## LARD MAKING

All of the fat trimmings and the leaf fat should be used in making lard. It is advisable to render the fat from the intestines separately, as this fat makes a low grade of lard. Since it does not keep well, this lard should be used first. The udder glands in the strip trimmed from the underside of the bacon should not be mixed with the lard which is intended to be kept. It is best to mix this fat with that from the intestine fat so as to be used first. The fat trimmings should be cut up in 1-inch square pieces (the smaller the better) and put into a kettle. It is advisable to render lard outside of the house; if rendered in the house there is danger of the lard running over on the stove and thus causing a fire. A large iron kettle on an open fire is probably most satisfactory.

A few handfuls of fat are first put into the kettle. As soon as some of the fat begins to fry out, more is added until the kettle is full. No water should be used to start with. To prevent pieces from sticking to the bottom of the kettle, the lard should be stirred frequently. It should not be cooked too fast, although it should be kept constantly boiling. The proper temperature is from 248° to 250° F. When the lard is ready to be removed from the fire the cracklings, which are straw-colored, are floating on top.

Most of the lard can be dipped out, but the cracklings should be put in a lard press and the remaining lard pressed out. To remove the small particles of cracklings the lard should be strained. The cracklings are protein in nature and cause the lard to spoil if they are allowed to remain. A strainer may be made from light muslin or from several thicknesses of cheesecloth. The lard should be stirred occasionally while it is cooling; this makes it whiter and of a finer texture. After the lard is cooled it should be tightly covered and stored in a cool, dark place. If there are mice around, extra precaution should be taken in covering the lard.

## PICKLING PIGS' FEET

The feet are well scraped and the toe nails and dew claws are removed. The feet are placed in a kettle, covered with water, and cooked until tender, which will require about 5 hours. Salt, to suit the individual taste, is added to the water while cooking. When the feet are tender, they are split with a knife and packed in an earthen jar covered with hot vinegar; spices are added.

## MAKING HEAD CHEESE OR SOUSE

All head meat together with the feet, tails, hearts, and any other scraps are trimmed off. The mixture is cooked until the meat separates easily from the bone. The liquid is poured off from the meat, the meat chopped fine, and returned to the kettle. It is then seasoned with salt and pepper. Some of the liquid is put back into the meat, after which it is cooked for about 14 minutes. It is then poured into a shallow pan and allowed to cool. Head cheese is served cold.

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