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The Home Meat Supply
Michigan State University Extension Service
Geo. A. Brown, Animal Husbandry
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THE HOME MEAT SUPPLY

By GEORGE A. BROWN

MICHIGAN STATE COLLEGE :: EXTENSION SERVICE
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THE HOME MEAT SUPPLY

By GEO. A. BROWN

Two of the contributing factors to the happiness of a farm home are good health and the feeling of security which comes through an abundant supply of meat, so essential in the well balanced diet.

A wider recognition of the desirability and frequent necessity of making the farm home more self-sufficient has resulted in a marked revival of interest in the home preparation of meat products. By proper methods of preparation and either freezing, canning or curing, every farm can be made to furnish the family a variety of meat products for use at all seasons of the year. All kinds of meat can be readily preserved for future use in greater abundance and at much less cost than if bought at retail. While mutton or lamb may be cured, either is more palatable when used fresh or frozen. There is no magic or secret about meat curing that cannot be mastered by anyone who will follow a few simple directions and exercise ordinary cleanliness and care.

The average American citizen consumed 127.9 pounds of meat in 1938, consisting of 59.9 pounds of pork, 53.4 pounds of beef, 7.6 pounds of veal, and 7.0 pounds of lamb, and also used 11.5 pounds of lard. It should be the goal of every farm family to provide a total of 140 pounds or more of dressed meat in some form for each member of the household. This will insure a more adequate diet, reduce the outlay for food, increase the consumption of farm products, and aid materially in making the farm home self-sustaining.

As indicated by the figures on meat consumption, pork is more extensively used than the other classes of meat and is the most satisfactory for curing, but cannot be held as long when frozen as either beef or lamb. The hog yields a larger amount of edible meat at less expense than any other animal. A 200-pound hog will produce a carcass weighing from 150 to 160 pounds, practically all of which is edible.

TOOLS AND EQUIPMENT

Figure 1 shows the desirable tools for farm butchering. In addition it is necessary to have a barrel for scalding, kettle for heating water, platform for scraping, and facilities for hanging the carcass while cooling.

"A" is a beef gambrel. Where only an occasional beef is butchered a

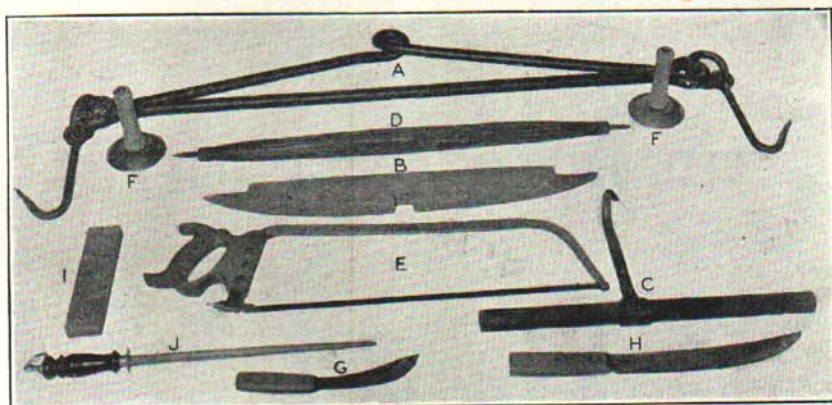


Fig. 1. Tools and equipment for home preparation of meats.

satisfactory gambrel may be made by placing a hog or hay hook through the clevis in each end of an ordinary evener. The only requirement of a hog gambrel, (B), is that it be sufficiently strong and grooved at both ends so that the halves of the carcass will not slip off. The hog hook, (C), is made for handling heavy hogs. With light hogs an ordinary hay hook with a loop for a handle is sufficient. The beef pritch (D) is used for holding the animal on its back in skinning a beef. A block of wood slightly flattened on one side to prevent rolling will serve the same purpose. The meat saw (E) is an essential part of the equipment. The use of a cleaver or axe should be discouraged as it is impossible to make neat clean cuts of meat and splintered bones are always objectionable.

A bell shaped hog scraper (F) is the most satisfactory tool for removing hair and scurf from a hog, although a dull knife will serve the same purpose. An eight-inch skinning knife (G) is indispensable and is used in sticking a hog, skinning a beef, or cutting the carcass.

The steak knife (H), while not essential, is a desirable part of the equipment, especially in cutting a beef carcass. A knife with a 12 or 14 inch blade is most satisfactory.

The oil stone and steel (I) and (J) provide the most satisfactory means of keeping the knives in proper condition. In addition, a dairy thermometer should be available with which to check the temperature of water for scalding hogs.

THE HOME PORK SUPPLY

Selecting Hogs for Slaughter

A well finished hog weighing from 175 to 250 pounds will prove most satisfactory for home consumption and for the sale of either fresh or cured hams, shoulders, and bacon. Most persons prefer cuts from the

lighter weight animals, as these cuts contain less fat and find more ready sale. For the home where a year's supply of lard is desired, the heavier weight of 250 pounds will prove preferable. There is less variation in the quality (tenderness) of pork than in any other class of livestock, the only real objections to the mature sow being the large proportion of fat in the carcass and difficulty of curing heavy hams. Where a liberal supply of lard is needed and a considerable part of the carcass is made into sausage, older animals which sell at a discount on the market may be used at home. In curing heavy hams and shoulders, care must be exercised in forcing plenty of the curing mixture into these heavy pieces, especially about the bones and joints.

Only healthy, thrifty animals in good flesh should be selected for slaughter. All animals should be kept off feed at least 24 hours before slaughtering, but should be given all the water they will drink. Withholding feed facilitates dressing and insures more thorough bleeding of the carcass. To obtain good results either in curing or storing meat, thorough bleeding is essential.

Sticking

Hogs bleed much better if stuck without stunning or shooting. They should be handled carefully to avoid bruising or any elevation of body temperature due to excitement. When a block is available, the live hog should be elevated by a rope placed securely around one hind leg just above the hock and then stuck. More thorough bleeding is obtained when the hog is suspended in this way. A rope fastened above the hog's hock will aid in getting him to the place of slaughter and prevent his moving too far away after sticking.

When it is necessary to throw the hog, one man should reach under the hog, grasp the legs on the opposite side and pull toward himself thus throwing the hog on its back. He should then grasp both front feet, sit astride the hog and hold it squarely on its back by the pressure of his knees against the animal's sides. Another man should place one hand on the lower jaw of the hog, holding the head down, (Fig. 2-a) and with the knife in the other hand make an incision two to four inches long from the point of the breast bone forward on the exact middle of the neck. The knife is then inserted in this incision at an angle of 45 degrees and forced down and back a distance of from four to six inches to a point below the front of the breast bone, giving the knife a slight twist before withdrawing it.

When the hog is properly stuck the blood will rush forth in a stream. Care must be taken not to insert the knife too deep and into the chest cavity as this will result in the blood settling in the chest cavity and

discoloring the interior surface of the ribs. Another common mistake is to stick on either side of the middle and under the ribs thus causing a bloody shoulder. After sticking, the hog should be released and allowed to stand while bleeding.

Scalding and Scraping

As soon as life is extinct, any blood adhering to the carcass should be scraped off and the hog scalded. A bench 18 to 24 inches high with a barrel fastened on a slope at one end makes a satisfactory arrangement (Fig. 2-b). The correct temperature of the water for scalding will depend upon conditions. When a constant temperature can be maintained by means of live steam or by a fire under the scalding vat, a temperature of 145° F. is sufficient. At this temperature, from three to five minutes are required to get a satisfactory scald.

Under farm conditions, the temperature will depend on the weather, which determines the rapidity with which the water will cool when transferred to the scalding barrel and the number of hogs to be scalded. Starting with water at a temperature of 170 degrees, if the weather is

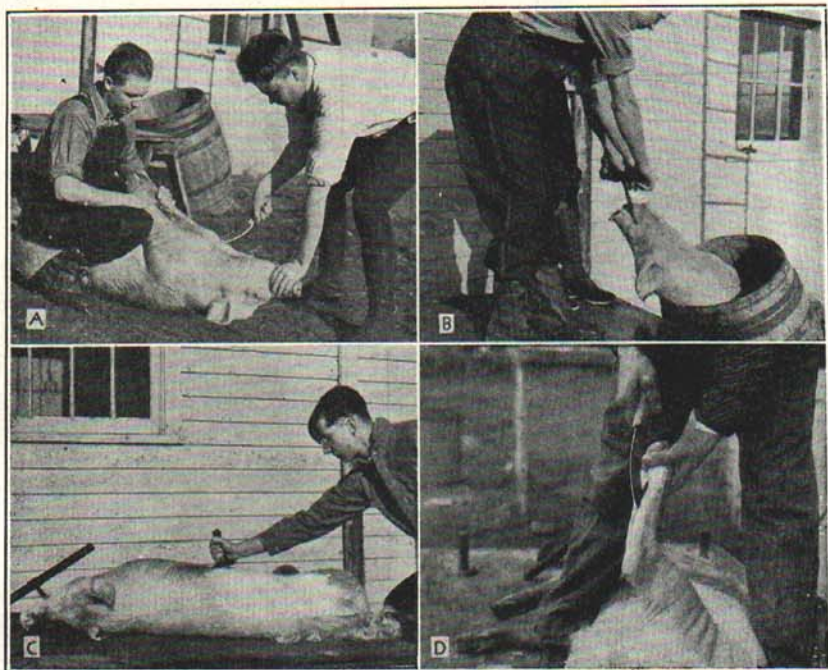


Fig. 2.

- A. Correct method of holding hog.
- B. Scalding.
- C. Scraping. Note angle at which scraper is held.
- D. Lifting tendons. Note knife pointed away from operator's hand.

mild, as many as three hogs may be scalded in the same water. The hind ends should be scalded first working as rapidly as possible and then the front ends. The first hog scalded should not be kept in more than 30 seconds before being removed to air and then returned to the water and left until the hair slips readily. The hog should be kept in motion while in the water. The addition of a small amount of lye, hard wood ashes, or lime to the scalding water will assist in removing the scurf, although the correct temperature of the water is most essential. Where a thermometer is not available, a fairly reliable test is to draw a finger rapidly through the water three times. If this can be done without burning the fingers, the temperature is about right. If a reserve supply of hot water is available to add to the barrel, the slower scalding at lower temperatures is most satisfactory.

One man can scrape the rear end of the first hog while the others are scalding the second. The hair should first be removed from the legs with a twisting motion of the hands and the dewclaws should be pulled off with the edge of a hog scraper. The rear end is then cleaned by using the edge of a scraper (Fig. 2-c). The tendons are next loosened in the hind legs, holding the end of the foot in the left hand and cutting away from the operator (Fig. 2-d). An incision should be made through the skin in the exact center of the leg; then cut along each edge of the tendons on the side of the groove in which they lie, raise the tendons, and insert gambrel. The front end then is scalded and the legs and head scraped first as they are the most difficult to clean.

After the hair and scurf have been removed, the carcass should be rinsed with warm water, scraped with a knife or scraper to remove all dirt, then rinsed with cold water, and any remaining hair shaved off with a sharp knife. The carcass is then elevated so that the head is some distance above the ground. It should then be thoroughly rinsed with cold water and scraped clean.

Opening the Carcass

The carcass is now ready to be opened. Place the knife in the incision where the hog was stuck, just below the breast bone, and cut through the breast, (Fig. 3-a). With older animals, it may be necessary to saw the breast bone. Next, cut down between the hams until the aitch bone is reached, following the white membrane which divides the hams. A small ridge on the under side of this bone will show the exact center and the point at which it may be readily split with a knife, after which the bung should be loosened by cutting around it. When barrows are being dressed, the sheath and penis should be cut loose the full length before the aitch is split (Fig. 3-b) and then removed with the bung. The hand is then inserted just below the hams

and with the blade of the knife which is pointed out, (Fig. 3-c) the underline is opened the full length. Cut around the bung and pull down, exercising care not to loosen any of the kidney fat or leaf lard with it, then grasp the intestines with the left hand and press down with the right hand until they are free of the backbone.

Next, insert the right hand under the liver and stomach, freeing them from their attachments, and still holding the entrails with the left hand, cut through and around the diaphragm at the point where the white fibrous part joins the red meat. Then, continue the cut along the backbone, releasing all of the viscera along with the intestines and sever the gullet at the throat. The entrails should be placed on a clean platform or in a tub.

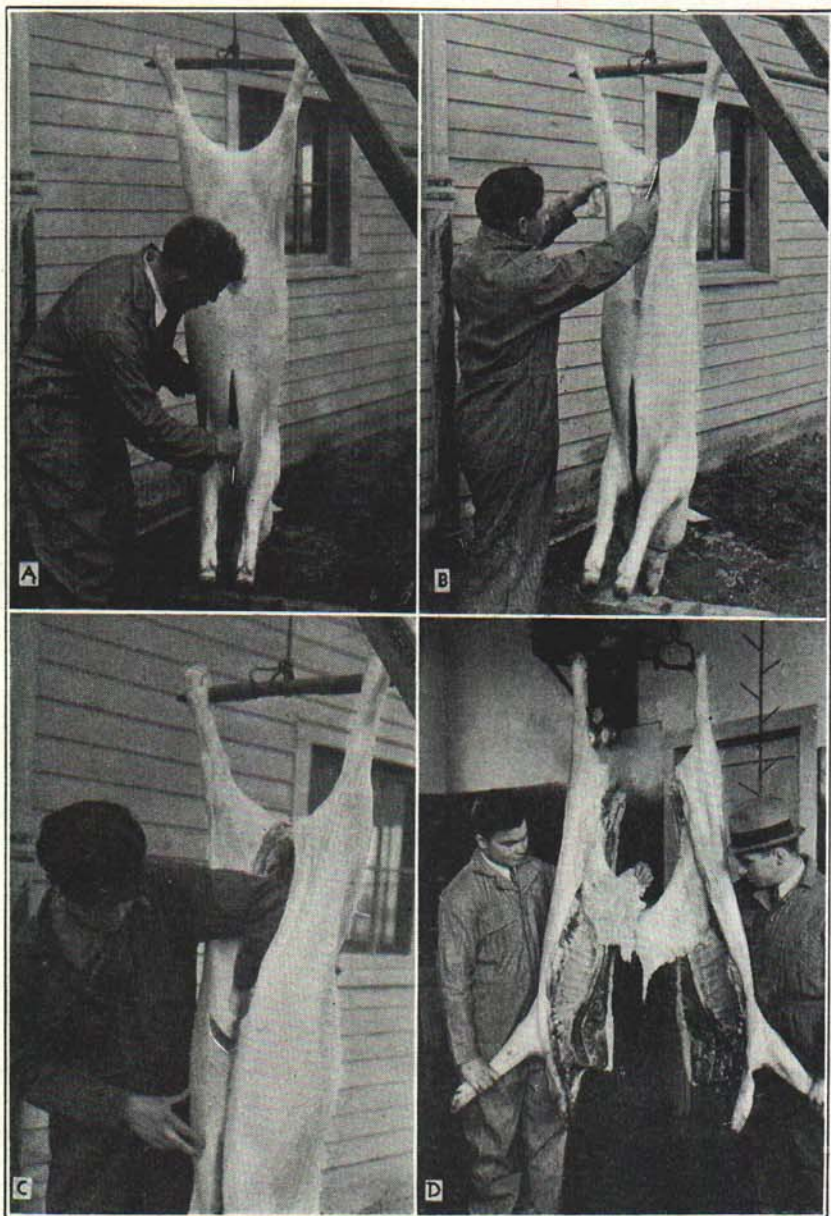
After removing the tongue and spreading the mouth, the inside of the carcass should be washed with cold water. The carcass will cool more rapidly if split down the middle of the backbone with a saw and the leaf lard pulled loose starting at the diaphragm and "fisting" it up, (Fig. 3-d). It is much easier to remove the leaf lard while the carcass is warm than after it has chilled.

Cooling the Carcass

Proper cooling of the carcass is one of the most important requirements of handling meat which is to be either cured or frozen. Under controlled conditions in the packing plant, the carcass is cooled to a temperature of 34-36 degrees within a few hours after slaughter. Under farm conditions, butchering preferably should take place when the temperature is just above freezing. Temperatures below zero and the freezing of the carcass on the surface before all of the animal heat has left it are often the causes of meat souring. During cold weather, the recently dressed carcass should be protected from freezing, but, in mild weather, it is advisable to butcher late in the day to gain the advantage of the cooler night temperatures. A free circulation of air facilitates cooling. In many sections of Michigan, cold storage facilities are available at a very moderate cost. The freshly dressed carcasses may be taken directly to the cold storage plant and left there until thoroughly cooled and ready to be cut and put in the curing mixture or frozen.

Care of Offal

As soon as the carcass is thoroughly washed, the liver should be separated, washed, and the gall bladder removed by grasping the small upper end and peeling out the bladder. The liver should be hung on a peg, being sure that the peg is through one of the tubes at the thick end. The lower thin end is then split to facilitate good drainage. The

**Fig. 3.**

A. Splitting breast.
B. Lifting sheath.

C. Opening underline.
D. Head removed and leaf lard lifted.

heart is cut off, washed and hung by the top, or pointed end, to facilitate perfect drainage.

With a fat hog, several pounds of lard may be made from the intestinal fat. In removing the intestinal or ruffle fat, lay the intestines upon a clean table or block, then start at the stomach end of the small intestine and free it from its loop around the large intestine. With the right hand, pull out the small intestine, from two to three feet at each pull. Then, while holding the intestines and ruffle fat with the left hand, insert the thumb of the right hand back of the accumulated tissue around the intestine, breaking the fat loose; then pull another two feet and repeat with the thumb and first finger of the right hand breaking the tissues loose. This is continued until the entire small intestine is free of the mesenteric membrane. The mesenteric membrane, ruffle fat, is then pulled loose from the large intestine and is soaked in cold water for from 12 to 14 hours to remove any blood or other substances which might be objectionable. While the intestinal fat makes a fair grade of lard, it does not possess as good keeping qualities as does the leaf lard or back fat. It should, therefore, be rendered separately and used first.

When the intestines are to be used for casings, they should first be turned inside out. This may be accomplished by placing one end of the intestines over a round tube large enough so that the end of the intestine is stretched over it with difficulty. The intestines may then be telescoped by merely holding them up and dropping through the tube. A small stream of water will greatly hasten their telescoping. After being completely turned, the intestines should be washed thoroughly and then scraped with a blunt stick, after which they are soaked in a weak solution of lime water for 12 hours. In the absence of lime water, they can be soaked in two gallons of water to which a tablespoonful of baking soda has been added. In the morning, they should be scraped with a dull knife or blunt stick and packed in salt until ready to use.

The stomach makes an excellent container or casing for either head-cheese or sausage. If so used, it should be slit for four or five inches at the small end, the contents thoroughly washed out, the stomach inverted and the internal surface thoroughly scraped with a blunt stick. The stomach should then be scalded from 10 to 12 minutes in water at a temperature of 150° F. Remove all of the inner lining by scraping, thoroughly wash the stomach with cold water, and pack in salt until used.

CUTTING THE CARCASS

The method of cutting recommended is similar to that followed in the majority of packing plants. With the bulk of the hogs dressed for home consumption in the fall and early winter months, when a part of the carcass can be used fresh or when pork is being sold, this method of cutting will be the most satisfactory. When the entire carcass is to be cured and none of the meat used fresh, this method of cutting may be varied by removing the spareribs and back bones, the entire side being cured as plain salt pork or as side and back bacon.

The first step is to remove the head, which is taken off at the first neck vertebra. This is about one-half inch back of the ears. Next split the carcass (unless previously split to facilitate cooling) exactly through the middle of the backbone, using a saw and knife to make a smooth cut. An axe or cleaver leaves a ragged cut and splintered bones. Figure 4 shows a half carcass of pork with the wholesale cuts outlined. Careful cutting will result in attractive appearing hams, shoulders, and bacon strips, which are always desirable and very essential when these parts are to be sold.

The jowls are first removed and may be trimmed as bacon squares and cured or can be used as sausage meat. The head should be split through the middle with a saw. In cleaning the head, the brains, eyes, and ears should be removed and the nasal cavities thoroughly washed. Soaking in a mild salt solution over night will aid materially in cleaning the head and will remove practically all the surplus blood. The head is then ready to cook and to make into headcheese (see page 58).

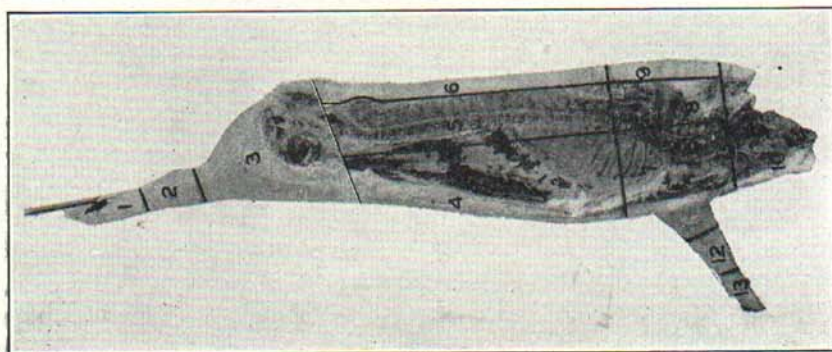


Fig. 4. The wholesale cuts of pork outlined.

- | | |
|-----------------------------|--------------------|
| 1, 13. Feet | 6. Fat Back |
| 2, 12. Hocks | 7. Picnic Shoulder |
| 3. Ham | 8. Boston Butt |
| 4. Side Meat or Bacon Strip | 9. Clear Plate |
| 5. Loin | 10. Jowl |

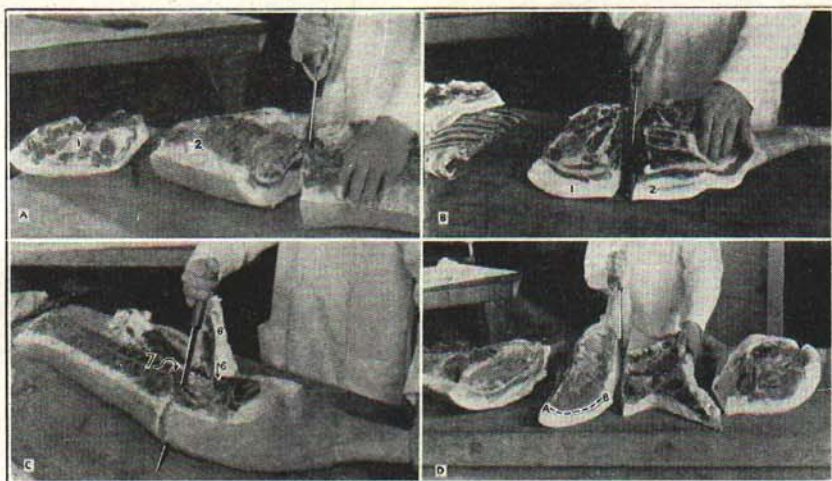


Fig. 5.

- A. Removing jowl (1); and shoulder (2).
- B. Separating Boston butt (1); and picnic shoulder (2).
- C. Cutting off ham.
- D. Separating bacon strip from loin. Fat back is removed from loin on Line AB.

The second step in cutting up the carcass of pork is the removal of the shoulder. This is usually taken off by starting at a point between the second and third ribs and cutting across the ribs on a line at right angles to the backline (Fig. 5-a). The shoulder, spareribs, and neck bones are removed next, making a clean cut close to the ribs. Following this, any bloody material under the ribs, the brisket, and the front part of the shoulder, which contains some glandular material should be trimmed off; these pieces are used for sausage trimmings. The remainder of the shoulder with the leg removed just above the knee is often sold as a long cut shoulder.

In the majority of cases, however, the shoulder can be either cured or sold to better advantage if divided into Boston butt, No. 1, Fig. 5-b, and picnic shoulder, No. 2, Fig. 5-b. The leg is removed from the picnic shoulder about three inches above the knee. The Boston butt is removed from the picnic shoulder at a point near the lower edge of the shoulder blade, or in some cases, below the shoulder blade. The picnic shoulder is then in shape to cure or to bone and roll for use as a fresh pork roast. The heavy covering of fat (clear plate) over the Boston butt is removed for lard. In the case of heavy hogs or when lean meat is preferred, it is desirable to trim from one-half to three-fourths of an inch of fat from the outside of the picnic shoulder, rendering this for lard along with other fat.

Removing the Ham

The exact point at which the ham should be removed will depend upon the length and weight of ham desired. A short cut ham is taken off just in front of the aitch bone, No. 6, Fig. 5-c, a long cut ham at the break in the backbone, No. 7, Fig. 5-c. Most hams are cut off at a point as shown in the illustration, about two-thirds of the distance from the aitch bone to the break in the backbone and on a line at right angles to the hind leg. Before making this cut to remove the ham, the flank should be cut from the ham and lifted forward, No. 8, Fig. 5-c, thus leaving the flank on the middle rather than on the ham. The ham is then faced. By this is meant the removal of some of the fat around the top of the ham and of all of the backbone and the fat directly beneath it, thus giving a square appearance to the end of the ham. With hams that are to be cured it is also an excellent idea to remove the top of the pelvic bone, thus exposing two bone surfaces and facilitating the entry of the curing mixture. In many cases, where hams are being sold, the hind leg is removed at the hock. In home curing, however, the author believes in removing the hind leg about two inches below the hock then again making a cut across about three inches above the hock, this piece being used for pickled pig hocks. With heavy hogs, the rind and all but one-half inch of the fat covering the outside of the ham should be removed to within 6 inches of the hock end.

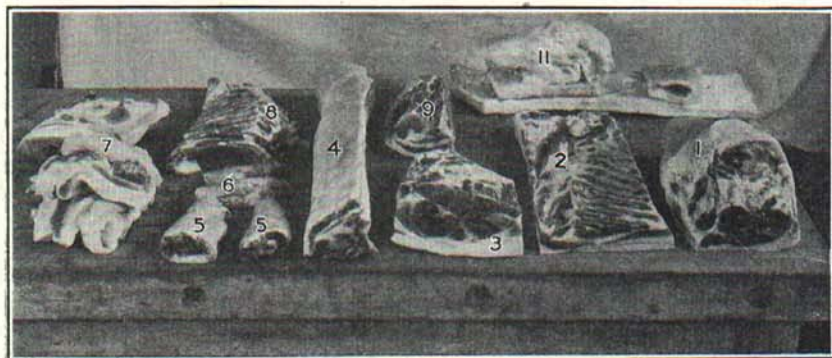


Fig. 6. The finished cuts.

- | | |
|--------------------|---|
| 1. Ham | 6. Feet |
| 2. Bacon Strip | 7. Sausage Trimmings |
| 3. Picnic Shoulder | 8. Spareribs |
| 4. Loin | 9. Boston Butt |
| 5. Hocks | 10. Leaf Lard, Clear Plate and Fat Back |
| | 11. Leaf Lard, Clear Plate and Fat Back |

Dividing the Middle

The middle is divided into loin, fat back, bacon strip, spareribs, and sausage trimmings. The first step is the separation of the loin from the bacon strip (Fig. 5-d). This cut is made starting at a point at the rear end of the middle directly below the tenderloin and cutting forward to a point directly under the backbone at a point where the shoulder was taken off. The fat back is removed from the loin following the line A-B, Fig. 5-d. From one-eighth to one-fourth inch of fat covering should be left on the outside surface of the loin. As a rule, the loin is enjoyed most when used fresh as either roasts or chops. When several hogs are being processed and a year's supply of meat put down, it is best to remove the rib-ends and backbones from the loins and cure the lean meat as back bacon. In removing the spareribs, the knife should be kept close to the ribs, making the cut so that the face of the bacon strip is left absolutely smooth. The end of the bacon strip containing the flank is cut off square and the lower edge is trimmed off. Figure 6 shows the finished cuts: (1) trimmed ham, (2) bacon strip, (3) picnic shoulder, (4) loin, (5) pig hocks, (6) feet, (7) sausage trimmings, (8) spareribs, (9) Boston butt, (11) leaf lard, clear plate, and fat back.

The average yield of eight hogs dressed and cut as directed above, by a class at Michigan State College was as follows:

	Pounds	Average Weight
Live Weight.....	1,874	234
Dressed Weight.....	1,478	184
Dressing Percentage.....	78.8	

	Pounds	Yield per Hog Pounds	Percentage of Live Weight	Percentage of Dressed Weight
Hams.....	264.87	33.1	14.13	17.92
Loins.....	213.37	26.7	11.39	14.44
Bacon Strips.....	171.13	21.4	9.13	11.58
Picnic Shoulders.....	163.25	20.4	8.71	11.05
Boston Butts.....	70.62	8.8	3.77	4.78
Spareribs.....	70.74	8.8	3.77	4.79
Sausage Trimmings.....	138.25	17.3	7.38	9.35
Lard (Raw Leaf and Fat Back).....	191.87	24	10.24	12.98
Head.....	120.5	15	6.43	8.15
Hocks.....	29.87	3.7	1.59	2.02
Feet.....	26	3.3	1.39	1.76

BEEF ON THE FARM

The average American eats approximately 50 pounds of beef yearly. The family of six persons, therefore, needs at least 300 pounds of beef per year, if each is to consume his share of the meat supply of the

country. Beef is not so extensively consumed on the farm as is pork, owing to the greater size of the beef carcass and to the mistaken idea that beef cannot be so readily cured and stored as pork products. Improved methods of canning and frozen storage and a better knowledge of how to cure meats eliminate this fallacy, and there is no reason why the farm family should not enjoy a greater variety in their meat diet than can be provided by pork products. Owing to the size of a beef carcass, storage space will be conserved when several neighbors work together, each supplying a beef at some time during the year and each taking a share of the carcass.

Selecting Cattle for Slaughter

Only healthy, thrifty animals should be selected for use as food. While there is very little danger from disease in properly cooked and prepared meat, still there is some danger in the handling of meat from diseased animals. In case any abnormal condition, such as diseased glands or abscesses, is found when dressing out an animal a competent veterinarian should be called to pass upon the suitability of the carcass for food. If a veterinarian is not available, any parts of the carcass which are noticeably affected should be destroyed. The animals selected should be in good flesh, but it is not necessary to have them over-fat in order to have nutritious palatable meat. Very fat animals produce a carcass of somewhat better keeping qualities if it is desired to store it fresh for a considerable length of time, and fat animals unquestionably produce a better flavored meat than do animals lacking in finish. With the extremely fat animals, there is, however, considerable waste in cutting the carcass. The most satisfactory meat from all standpoints is obtained from the well fed young animal between one and two years of age. However, an older cow which is well fattened furnishes beef of excellent flavor. This meat will have good eating qualities if it is ripened by holding in storage. When the meat is to be canned at home, the older animal is very satisfactory.

Care Before Slaughtering

The animal to be slaughtered should be kept off feed for 24 hours but given access to water at all times, care being taken to see that the animal does not become unduly excited or overheated. The overheated or excited animal often fails to bleed properly, and it is difficult to cool its carcass thoroughly. The animal should be handled carefully so that the carcass will not be bruised. The use of a club or whip in handling is especially objectionable.

Equipment

Almost any farm has the necessary equipment for dressing a beef. The tools necessary are shown on page 4 (Fig. 1). In addition to the tools shown, one should have an axe for stunning and a hoist for raising the carcass, clean cloths, and water from which the chill has been removed for washing the carcass. A double pulley or chain hoist will serve to elevate the carcass. Where these are not available the carcass may often be raised on the barn floor by using the hay hoisting equipment.

Stunning

With especially nervous animals or where facilities are not sufficient to secure the animal a gun may be used, although where the animal may be haltered or made fast to a post or ring in the floor, stunning with an axe is preferable to shooting. The proper point to either stun or shoot is that at which lines drawn from either horn to the opposite eye intersect in the center of the forehead. When using an axe a short grip should be taken and a snappy, powerful blow rendered. When one grasps the end of the axe handle and makes a long swing, the animal will almost invariably dodge to avoid being stunned. The first blow properly administered will completely stun the animal. Following this they should be given one or two more blows until the breath is released.

Bleeding

In bleeding, if the animal is lying on its right side, the person handling the knife should place his right foot against the animal's jaw and the left foot against the forelegs; then, by pressure on each foot, extend the jaw and press the forelegs back, thus making it easier to stick the animal and reducing the possibility of injury by being struck by one of the front feet. In sticking, hold the knife in the right hand and make an incision in the exact middle of the brisket, opening the skin from this point forward to the jaws and in deep enough to expose the windpipe. Then setting the point of the knife at the front of the brisket, cut straight toward the backbone, being careful not to get back of the breast bone and into the shoulder cavity or to cut the windpipe. The arteries, which must be severed, lie between the point of the brisket and the backbone. By cutting straight from the point of the breast toward the backbone, one will usually sever these arteries. When properly done one will notice both the dark arterial blood and the lighter colored venous blood, (Fig. 7-a). Bleeding will be facilitated by standing at the animal's back and pumping with the foot in the region just forward of the hips. Care should be taken not to get near the legs until all life is extinct. This may be determined by breaking the tail.

Removal of the Head

The first step in the removal of the hide is the skinning of the head. This is started by making an incision from horn to horn or across the top of the poll. Then cut from the upper horn across the eye to the end of the nose (Fig. 7-b), then skinning out the forehead and face.

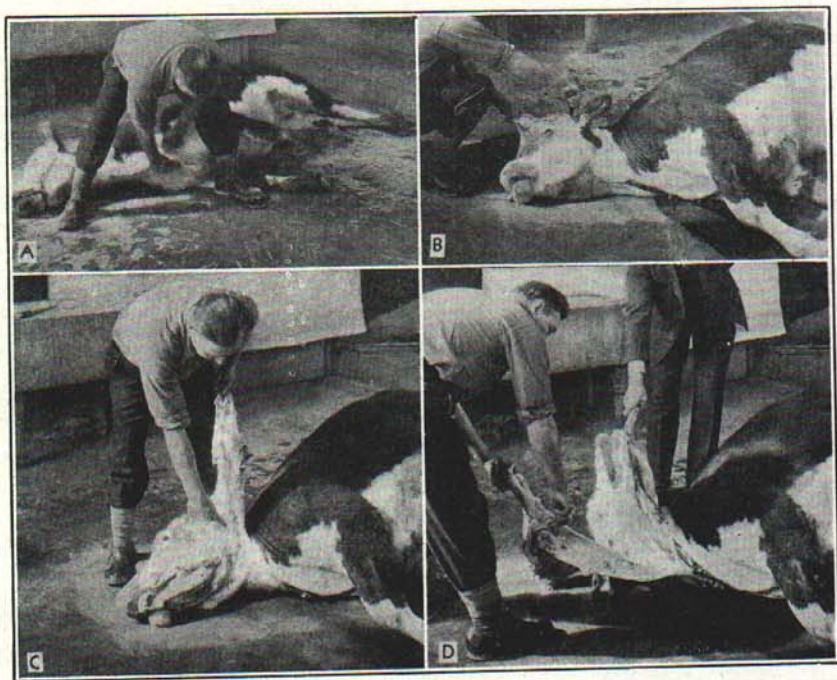


Fig. 7.

A. Correct method of sticking.
B. C. D. Skinning out the head.

Next, extend the incision in the throat to the point of the jaws and remove the hide from the upper part of the head, (Fig. 7-c). The lower side is removed by having an assistant hold up the head by grasping the tongue (Fig. 7-d). The same thing may be accomplished by one man when he can stand on the horn and hold the head erect, or it may be accomplished by inserting a steel in the nostril and pressing with the knee against the steel. Next, holding the head extended forward with the left hand on the jaw, sever it by an incision through the enlargement in the windpipe and at the atlas joint or first neck vertebra. Immediately upon severance of the head, the tongue should be removed by an incision just inside of each jaw cutting forward to the point where they join. Then grasping the end of the tongue, it should be

cut off just forward of the bones at its base. Clean the tongue by scraping with a knife from the tip to the base. Make an incision near the tip of the tongue and hang it on a nail or peg. The cheek meat is removed from the side of each jaw by cutting very close to the bone and down to the rise just over each eye. From two to four pounds of excellent stew meat may be obtained from the head in this way. Where it is desired to save the brains, the head may be split with a cleaver or saw and the brains removed.

Skinning

Roll the animal on its back and hold in place with a block of wood or a beef pritch (Fig. 1). First, hold the front leg extended forward as in Fig. 8-a, and remove the dewclaws at their base. Release the tendons by an incision across the rear of the leg just above the sole of the foot, and with the point of the knife, open the hide to a point just above the knee. Skin the leg out on both sides of this incision and cut across the tendons just below the knee completing the removal of the leg at the square joint (Fig. 8-b). Note that the start on the foreleg is made on the back side of the leg.

Grasp the hind leg and cut across the tendons just above the sole of the foot. This will relax the foot and it may be pulled forward and held between the knees so that an incision can be made from a point between the dewclaws over the rear of the hock, (Fig. 8-c). In making this incision, the point of the knife may be used until after one gets above the hock. When skinning over the fleshy part of the quarters, the knife should be held flat to avoid cutting through the fell or fascia

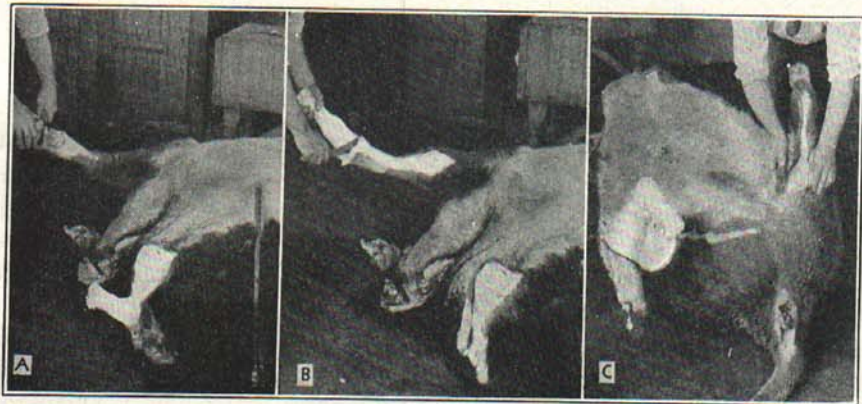


Fig. 8.

- A. Severing tendons to relax the leg.
- B. Skinning out foreleg.
- C. Opening hide over rear quarters.

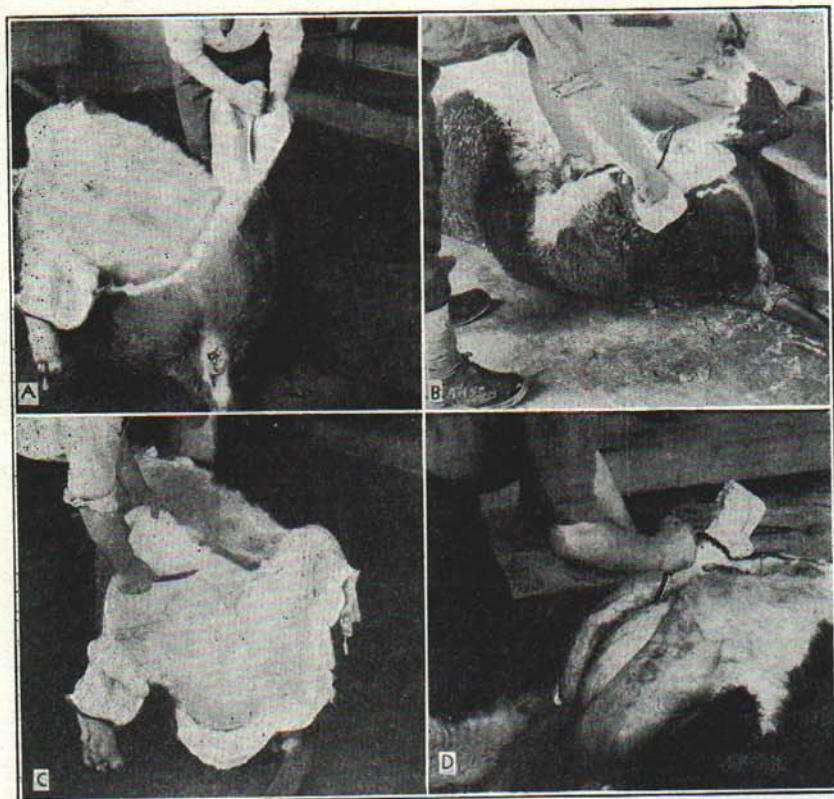


Fig. 9.

- A. Skinning out hock and rear shank.
- B. Removing rear shank at lower joint of hock (square joint).
- C. Skinning out buttocks and over cod.
- D. Opening breast.

and exposing any lean meat. Care should be taken at all times to keep the knife close to the hide and to leave a smooth white covering over the carcass. After skinning on each side of the hock, (Fig. 9-a), and rear leg, the leg is removed at the lowest joint of the hock, (Fig. 9-b). The buttocks are then skinned out and the hide loosened over the cod or udder (Fig. 9-c). Note the smooth even covering over the carcass and that the hide falls away from the meat.

The abdominal cavity is opened as shown in Figs. 9-d and 10-a. Start at the point of the brisket and make a stroke the full length of the knife down to the breast bone and cutting back to the rear of the sternum. Then reverse the knife with the point up and the hand in the abdominal cavity continue the incision to the middle of the quarters or through the middle of the cod or udder. Opening the underline at

this time permits any gases which may be forming in the digestive tract to escape and facilitates the skinning out of each side. The next step for one with a little experience is skinning back on either side about two lengths of the knife and for the entire distance of the underline. A little practice will enable one to make a long clean incision on either side and throw the hide back away from the carcass (Fig. 10-b).

Siding

If the operator is right-handed, he will grasp the hide with the left hand near the rear flank of the animal, and pull the hide straight up. Then, with a downward motion of the knife held almost parallel to the hide, make a clean incision, leaving the meat surface entirely white and continue skinning forward on the side of the animal, as in Fig. 10-c and 10-d, until the shoulder and foreleg are reached. The lower side

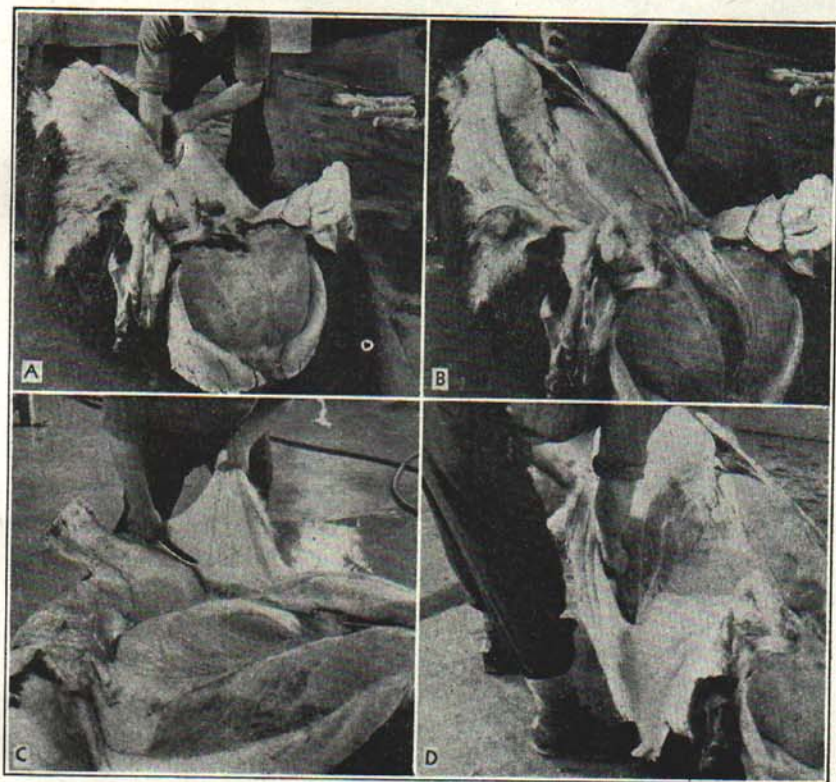


Fig. 10.

- A. Opening underline. Note position of operator's arm and knife.
B. C. D. Siding. Note that hide is pulled straight up rather than away from beef and that knife is held nearly parallel to hide.

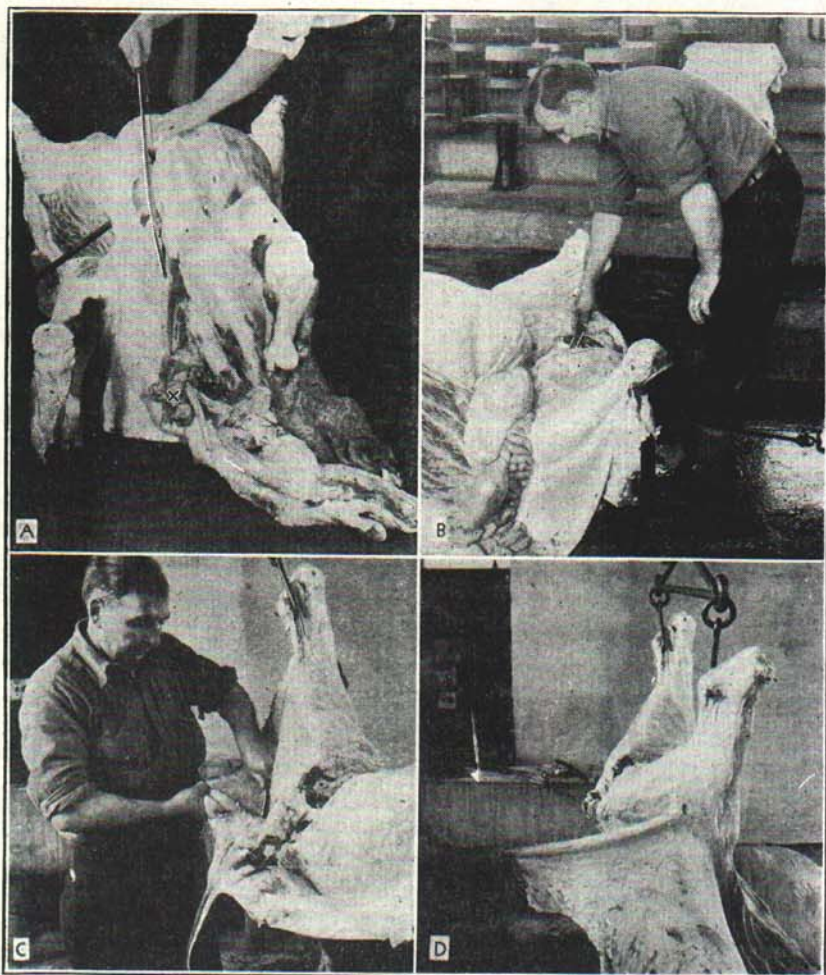


Fig. 11.

- A. Sawing the breast bone. (X) Sweetbreads.
- B. Splitting the pelvis.
- C. Skinning the tail and rump.
- D. Pulling the hide from the quarters.

of the animal's body is covered by a thin muscle with practically no fat between it and the hide. This should be left on the carcass until it becomes very thin and difficult to keep on the carcass, after which one may skin into the muscle leaving a small strip of it on the hide. Even after cutting into this, however, the knife should be kept close to the hide and all the fell or fascia left on the carcass. In skinning the opposite side from that shown in Fig. 10-c and 10-d, the start is made at the front leg rather than at the rear. When the siding is completed, cut

the windpipe and esophagus free from the neck. Saw the breast with a forward and downward motion to avoid cutting into the stomach. Figure 11-a shows the sweetbreads or thymus glands, lying just forward of the breast and below the windpipe, which if taken from animals under 15 months of age are a delicacy. Pull the intestines out at the rear flank and cut down on the white line dividing the quarters to the exact middle of the pelvis, which in young animals may be severed with a knife (Fig. 11-b). In older animals, it is usually necessary to use a saw or cleaver to split the pelvis.

Wash the carcass with a moist cloth and warm water. Too much water and especially cold water in hot weather is undesirable as it will chill the surface and prevent the proper cooling out and drying of the carcass. The carcass is then elevated so that the quarters are at about the height of the operator's waist and an incision is made the full length of the under side of the tail. Sever the tail at a joint near its base and pull it out of the hide (Fig. 11-c). Skin the rump on each side of the tail holding the knife close to and nearly parallel to the hide. Avoid if possible either scoring the hide or leaving the carcass rough. Remove the hide from the thighs by pulling (Fig. 11-d). If the hide does not pull readily it may be loosened with a knife, being careful not to remove any of the fell with the hide.

Loosen the rectum and intestines, letting them fall down over the paunch. Do not disturb the fat covering the kidneys (Fig. 12-a). Start splitting the carcass by sawing in the exact middle of the backbone from the point at which the tail was removed to the break or turn in the vertebra. If the omentum or fatty membranes surrounding the stomach are to be kept clean for household use they should be removed at this time and not allowed to reach the floor (Fig. 12-b). Then by pressing on the paunch with one knee, it may be forced downward and by the use of the knife the intestines and paunch are freed from their attachment in front of the kidneys and along the backbone. Just before the paunch and intestines are allowed to drop to the floor or container, one should grasp the liver and prevent it from coming in contact with the floor. Remove the gall bladder, hang the liver on a hook inserted through one of the tubes at the thick end, and make an incision with a knife at the lower or thin end to permit thorough drainage.

Raise the carcass until it swings clear of the floor. Cut entirely around the diaphragm, the muscle separating the digestive organs from the heart and lungs, at a point where the white membrane joins the muscular tissue near the ribs. Remove the lungs, gullet, and heart. Wash the heart and hang by the pointed end to facilitate good drainage. The removal of the hide is then completed, skinning down the back and over the forequarters. Finish splitting the carcass, using a

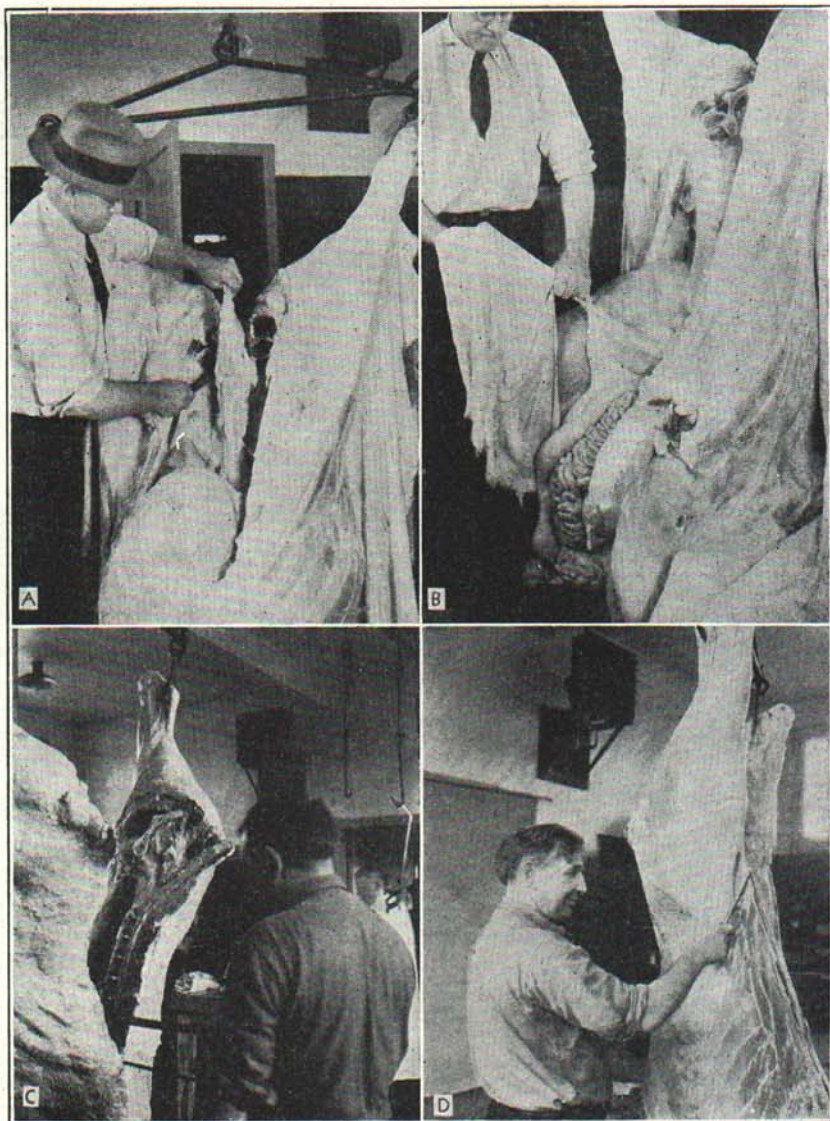


Fig. 12.

- A. Lifting the bung.
 B. Removing the caul fat.
 C. Splitting the carcass.
 D. Cutting the flanks loose.

saw, as shown in Fig. 12-c. The vertebra and spinal processes should be split in the exact middle. When beef is being dressed for sale, the spinal process should be scored with a scribe saw or cleaver one-third of their length from the vertebra and the outer ends broken over with the side of an axe or heavy cleaver. Cut across the upper end of the

red muscles of the flank where they join the thigh, (Fig. 12-d) and trim off any rough or ragged edges about the neck. Move each foreleg up and down three or four times and at the same time press a knife against the lower end of the neck and scrape up to the shoulder. Those motions will remove any blood which may have lodged in the neck and shoulder. Wash the entire carcass using warm water and a clean damp cloth, then wring cloth thoroughly and wipe carcass dry.

Cooling the Carcass

Best results are obtained when the carcass can be cooled slowly or kept at a temperature between 40° and 45° F. for 24 hours and thereafter kept at a temperature slightly above freezing, or around 34° to 36° F. While it is not possible to have these conditions exact under farm conditions, they can be approximated by hanging the beef on the north side of a building, slaughtering during the evening in the early fall or on a mild day during the winter season. In no case should the carcass be allowed to freeze until after it is entirely cooled out. When the temperature is down around zero, the carcass should be protected in some way to prevent freezing for the first 24 hours.

Beef improves with age. The well fattened animal, having a good covering of flesh, provides more tender and palatable meat if allowed to hang from 10 days to two weeks before being cut. This is, of course, not possible unless one has proper temperatures. Neither is it possible to hold thin carcasses without any fat covering for this period of time, as the outside of the carcass will dry out and turn dark. Under farm conditions, it is usually necessary to begin to consume beef soon after slaughter if any appreciable amount of it is to be enjoyed as fresh meat. Where beef is to be canned or cured by placing in brine, this should be done as soon as possible after the beef is cooled out, unless it can be held at a temperature just above freezing in a clean, dry place, which will permit curing for a week.

Care of the Offal

The well fattened beef animal contains a large amount of fat about the internal organs. The removal of the omentum about the stomach has already been discussed. The mesenteric membrane supporting the intestines also furnishes a large amount of fat which may be saved and utilized as soap grease. The running of the small intestines of a beef is started the same as that of a hog, except that a knife must be used with the beef intestines as the fat cannot be pulled loose with the thumb and finger. When the intestines are to be used for casings, they should be cleaned and handled the same as those of hogs, page 10.

The first and second stomachs of the beef are frequently used for

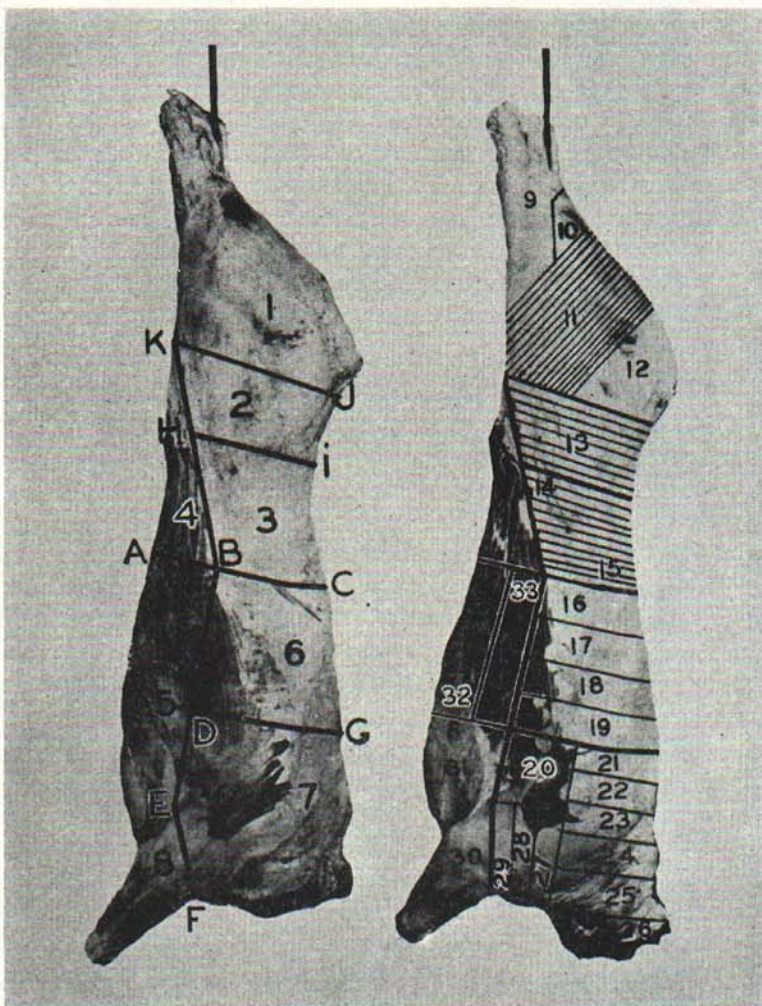


Fig. 13. Wholesale and retail cuts outlined.

Wholesale Cuts

1. Round
2. Loin End
3. Short Loin
- 2, 3. Loin
4. Flank
5. Plate
6. Prime Rib
7. Chuck
8. Shank

Retail Cuts

9. Shank
10. Heel
11. Round Steak
12. Rump
13. Sirloin Steak
14. Porterhouse Steak
15. Club Steak
- 16, 17, 18, 19. Rib Roasts
20. Shoulder Clod
- 21, 22, 23. Chuck Rib Roasts
- 24, 25. Shoulder Roasts
26. Neck
27. Knuckle Bone Pot Roast
- 28, 29. Round Bone Pot Roasts
30. Shank
31. Brisket
32. Navel
33. Short Ribs

tripe. When utilized in this way, they should be split open, emptied of their contents and thoroughly washed, using several waters. After cooling, they should be scalded in water at a temperature of 150° F. for from 10 to 15 minutes, or until the inner lining can be easily removed. This lining is then scraped off with a hog scraper, or if this is not available, a heavy spoon may be used. This should leave the inner surface almost snow white in color. After cooling, the stomachs are cut into strips and cooked at a simmering heat for three hours, or until tender. Following this, the tripe should be chilled in cold water, and the outside membrane and all adhering fat scraped off and the meat placed in brine in an earthenware crock or wooden bucket for three or four days. The tripe should then be cut into small pieces, covered with a spiced pickle, brought to the boiling point, placed in cans, and sealed. It is ready to use without further preparation.

Care of the Hide

Farm hides are not held in good repute as compared with packer hides. This is due to the way in which they are removed and their subsequent care. In the removal of the hide, extreme pains should be taken not only to avoid cutting it but also to avoid scores, which are cuts extending from a third to half way through the hide. These materially weaken the leather and render it unfit for any use where maximum strength is necessary. Following the removal of the hide the ears and any fleshy part about the head should be removed, as these spoil very rapidly. Any dirt or manure adhering to the outside of the hide should be washed off; and, if the hide is to be held for any length of time, the flesh side should be covered with an amount of salt equal to from one-half to two-thirds the weight of the hide, the hide should be rolled into a compact bundle, and stored in a cool place. When a large number of hides are being stored and are to be kept for some time, they should be cured. A cool, moist cellar free from drafts or direct sunlight is best for curing. Allow the hides to cool, trim carefully, clean, and lay flat on a platform sloping slightly to one end at which the head of the hide is placed. A layer of salt is first placed on the platform on which the first hide is laid over. This hide is then covered with salt equal to half or two-thirds of its weight, and the piling is continued in this way with alternating layers of salt and hide. Hides so stored will cure in about six weeks.

CUTTING THE CARCASS—FRONT QUARTER

The first step in cutting the beef carcass is known as quartering or removal of the forequarters. The separation takes place just back of the last rib or between the twelfth and thirteenth ribs. In either



Fig. 14.

A. Wholesale cuts of forequarter.
 B. C. D. Retail cuts.

case, the knife should be inserted just above the rib and an incision made to within four inches of the flank, which is left to hold the forequarter. Then the direction of cutting should be reversed and the rib followed until the eye or large muscle next to the vertebra is reached. At this point, the direction is changed somewhat to make the cut through the eye at right angles to the backbone. Saw through the vertebra, lift the front quarter to a block or table and finish cutting the flank line, line ABC—Fig. 13.

The first step in the cutting of the front quarter is the removal of the shank. This is taken off just above the elbow joint on a line parallel with the brisket or bottom of the quarter, Line EF, Fig. 13. The shank is used as a boiling piece, soup bone, or the shank meat may be trimmed off for ground beef, and the bone used for soup stock.

The second cut, removed from the forequarter, is the plate. It is taken off on the line BDEF, Fig. 13. "B" is a point 10 to 12 inches from the inner edge of the backbone, the exact distance from the backbone to point "B" depending upon the thickness of the carcass. The plate may be further divided into the brisket, which is taken off between the fifth and sixth rib, the navel and short ribs, 31, 32, 33,

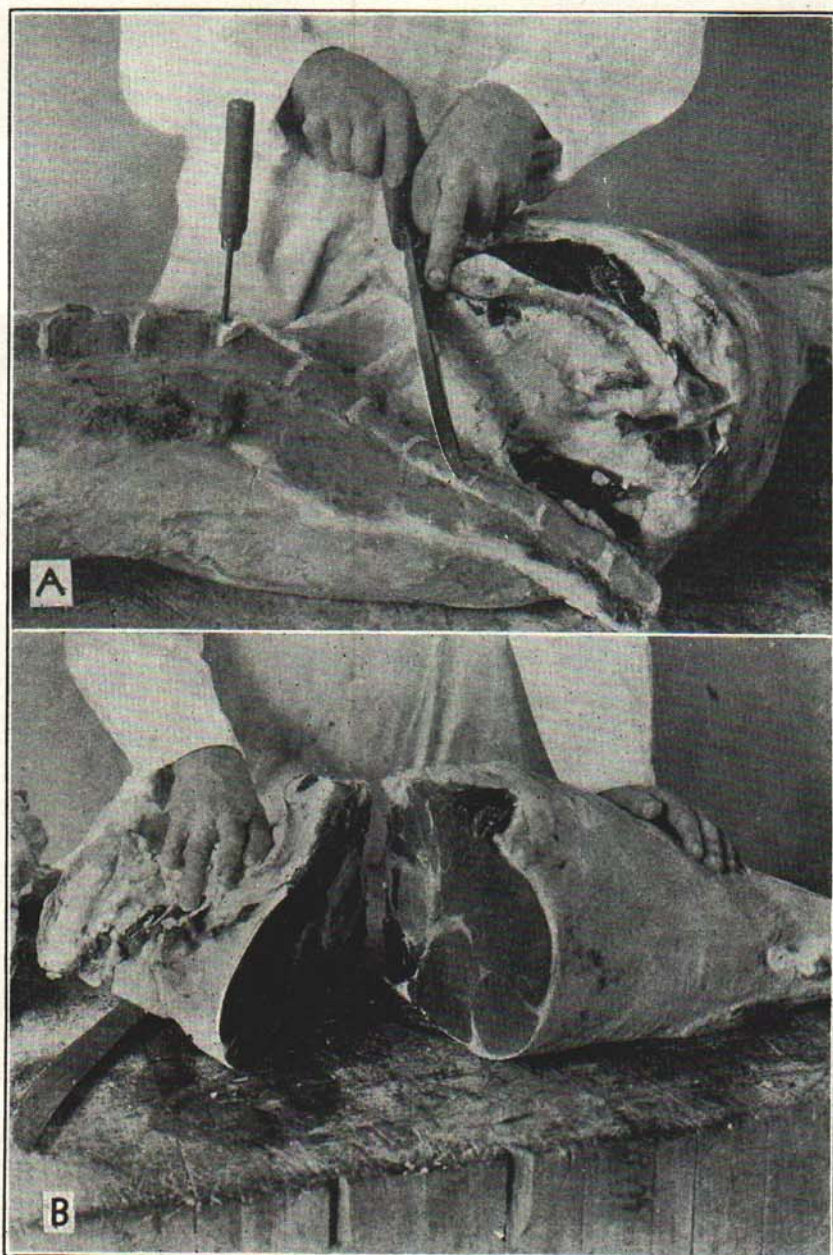


Fig. 15.

- A. Separating loin and round.
- B. Removing rump from round.

Fig. 13. The navel and short ribs are separated through the cartilaginous end of the ribs. The plate consists almost entirely of stew meat, although in many cases it is boned, rolled, tied and cut into pot roasts or used in making corned beef.

The prime rib, which provides the best oven roasts in the carcass, usually consists of seven ribs, namely, the sixth to twelfth inclusive, although when all ribs are left on the front quarter, the rib cut may be taken off eight ribs long on young cattle. In no case, however, should any of the shoulder blade except the soft cartilaginous part, which can be cut with a knife, be left in the rib cut. Line DG, Fig. 13, shows where the prime rib cut is separated from the chuck between the fifth and sixth ribs. Figure 14 shows the wholesale and retail cuts of the front quarter. The prime rib may be used as rolled rib roast by removing the ribs, rolling, and tying, or is frequently used as a standing

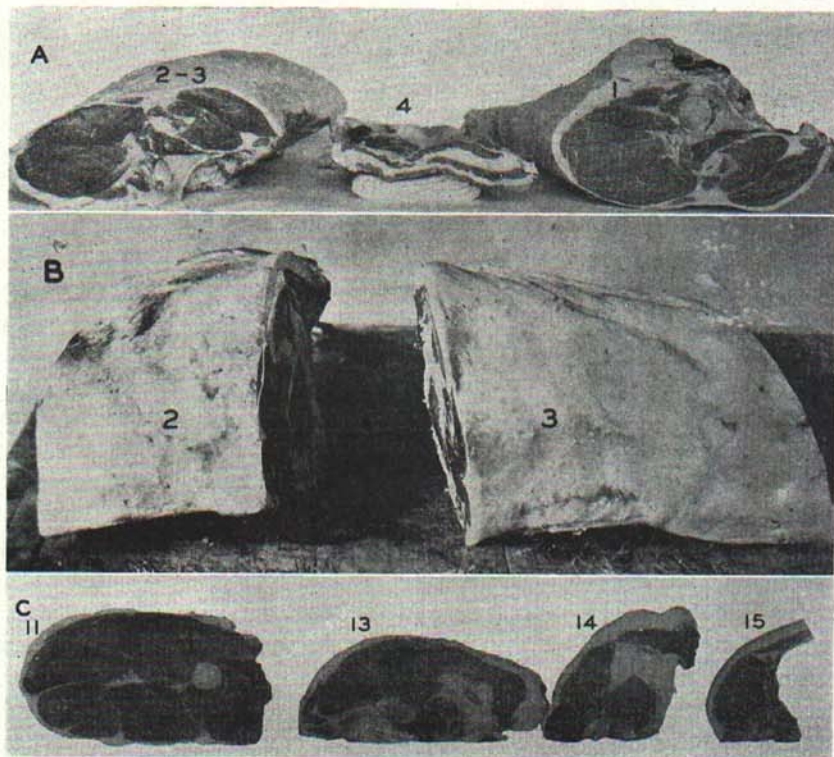


Fig. 16. Wholesale and retail cuts of hindquarter.

- | | |
|---------------|-----------------|
| 1. Round | 11. Round Steak |
| 2. Loin End | 13. Sirloin |
| 2,3. Loin | 14. Porterhouse |
| 3. Short Loin | 15. Club Steak |
| 4. Flank | |

rib roast. The standing rib roast is made by cutting a short section, about two inches long, out of the middle of the ribs and folding over the ends, thus permitting it to be placed in a small oven, and also having two points of support so that it stands up in good shape.

Shoulder Cuts

The chuck is usually sold as oven roasts or pot roasts. Some of the most desirable pot roasts in the entire carcass are those obtained from the bottom of the chuck and sold as round bone pot roasts or cross rib roasts, Nos. 28, 29, Fig. 13. The chuck rib roast cuts, 21, 22, and 23, when taken from young, well finished cattle may be used as oven roasts, but are more satisfactory as pot roasts. Chuck steaks are also occasionally taken from this part of the carcass. Cuts No. 24 and 25 from the neck should be used as boiling meat and No. 26, the neck, as ground beef or for stewing.

The Hindquarter

The first step in the cutting of the hindquarter is the removal of the flank. The quarter is laid on the block with the outside down. The flank is removed by starting just back of the cod or udder. All of the cod or udder fat is left on the flank, the cut being made just as close to the lean of the round as possible without exposing too much lean meat, and then forward to the end of the quarter at a point 10 to 12 inches from the edge of the backbone, Fig. 13, line KHB. The flank contains only a small proportion of edible meat, consisting of the flank steak and a small amount of stew meat or material which may be used for ground beef.

The loin may be removed with a high degree of accuracy by counting back three and one-half vertebrae from the break in the backbone (Fig. 15-a) and then cutting from this point straight across the quarter approximately one inch forward of the aitch bone. The flank, round, and loin correctly divided are shown in Fig. 16-a. The loin may then be divided into the short loin and sirloin (Fig. 16-b). The cut dividing these two parts is made across the cartilaginous end of the pin bone. The short loin, after the removal of the kidney knob and bed fat, furnishes the most desirable and expensive steaks in the entire carcass. Two or three steaks at the front or rib end of the short loin are usually sold as club steaks, the remainder as porterhouse steaks. The sirloin steaks taken from the sirloin end, are next to the porterhouse steaks in point of value. The rump is removed from the round on a line parallel to, and just beneath the pelvis (Fig. 15-b). The rump is usually boned out, rolled, and used as an oven roast, ranking very closely in value to the prime ribs. The round is then cut into

Table 2. Dressing record of 57 cattle (27 steers—30 heifers) 1927-1930.

	Average Weight Per Head Pounds	Percent Live Weight	Percent Dressed Weight
Calculated from totals of 57 cattle			
Live Weight	793.93	—	—
Hot Dressed Weight	485.61	61.16	—
Cold Dressed Weight	475.59	59.90	—
Weight Right Half	236.64	29.81	49.76
Hide	68.17	8.59	—
Offal Fat	40.04	5.04	—

Cutting record of the right half carcass, of 57 cattle (27 steers—30 heifers).

	Average Weight Per Head of Cuts from Right Half Carcass Pounds	Percent Live Weight of Cuts from Right Half Carcass	Percent Dressed Weight Based on Right Half Carcass
*Right Front Quarter	119.63	15.07	50.55
Plate	27.05	3.41	11.43
Prime Rib	22.46	2.83	9.49
Rolled Rib Roast	17.79	2.24	7.52
Lean Trimmings .....	.73	.09	.31
Bone	3.86	.49	1.63
Fat Trimmings .....	.08	.01	.03
Chuck	61.09	7.70	25.82
Chuck Rib Roasts	16.03	2.02	6.77
Center Chuck Roasts	15.36	1.93	6.49
Arm Roasts	13.75	1.73	5.81
Neck Roasts	13.75	1.73	5.81
Lean Trimmings	1.87	.23	.79
Bone	1.87	.24	.79
Shank	8.28	1.04	3.50
Lean Trimmings	4.93	.62	2.08
Bone	3.37	.42	1.42
Right Hind Quarter	116.98	14.73	49.44
Flank	12.99	1.64	5.49
Lean Trimmings	6.75	.85	2.85
Fat Trimmings	6.23	.78	2.63
Loin	48.26	6.08	20.40
Short Loin	26.90	3.39	11.37
Porterhouse	19.79	2.49	8.36
Lean Trimmings .....	.63	.08	.27
Kidney Knob	6.55	.83	2.77
Loin End	21.21	2.67	8.96
Sirloin	18.86	2.38	7.97
Bone .....	.55	.07	.23
Fat Trimmings	1.89	.23	.78
Round (Rump Off.)	44.73	5.63	18.90
Round Steaks	29.73	3.74	12.56
Heel	5.32	.67	2.25
Lean Trimmings	3.53	.44	1.49
Bone	6.06	.76	2.56
Fat Trimmings .....	.13	.02	.06
Rump	11.36	1.43	4.80
Rolled Roasts	8.21	1.03	3.47
Bone	2.54	.32	1.08
Fat Trimmings .....	.59	.07	.25
Total from Right Side	237.75	—	100.47
Total Retail Meat	204.08	—	86.24
Waste Bone and Fat	33.67	—	14.23

*The average weight of the various wholesale and retail cuts per head and the percentages that these cuts are of the live weight as given in columns one and two are based upon the cuts from one-half of the carcass. The respective weights and percentages of the live weight that these cuts are, considering both sides of the carcass, would be approximately double the figures given in columns one and two.

either Swiss steaks, approximately one inch thick, or thin steaks for frying. Number 10, known as the heel cut, should be used as boiling meat or as ground beef. Figure 16-c shows typical steaks from the round, sirloin, and short loin.

Table 2 gives the average dressing and cutting record of the right half carcass of 57 choice yearling Hereford cattle cut according to the foregoing instructions.

The cuts of meat shown in Figs. 14 and 16 are numbered the same as these cuts in Fig. 13, which shows the entire carcass.

LAMB AND MUTTON

While lamb and mutton have been used from time immemorial as a source of human food, they have not been so extensively used in the United States as has either beef or pork. In fact, the per capita consumption of lamb in the United States is much less than in many foreign countries. This is rather difficult to understand because lamb is one of the most palatable and nutritious of meats. The per capita consumption of lamb and mutton in the United States is only 7.0 pounds as compared with a per capita consumption of 53.4 pounds of beef and 59.9 pounds of pork. In the United States, the great bulk of lamb is consumed along the Atlantic seaboard, the per capita consumption in New York being about 12 pounds, whereas in Texas it is much less. In other words, the areas where lambs are produced in large numbers could do much to curtail surpluses and assist in maintaining the price of their product by consuming more lamb and mutton at home.

Lamb, because of its comparatively small size, lends itself remarkably well to home consumption. A lamb dressing 40 pounds, prepared for use as described later, can be stored in practically any family refrigerator and kept until used, thus allowing the farm family to add variety to the meat diet at any time of the year.

Selection of Lambs for Slaughter

A well finished but not unduly fat lamb from five to six months of age and weighing from 80 to 100 pounds is most satisfactory as meat. In fact, practically all of our markets will pay a premium for well finished lambs weighing in the neighborhood of 90 pounds and under a year in age. A yearling sheep or lamb too heavy or too light to satisfy the exacting demands of the market will prove just as satisfactory for home use. Ewes, well conditioned, but not too fat may be used at seasons of the year when weather conditions are such as to permit the carcass to hang for a few days before it is used.

Care Before Slaughter

As already described under other classes of livestock, lambs should be kept off feed for 18 to 24 hours before dressing and so handled that they do not become worried and excited. In catching the lamb, care should be taken not to bruise the carcass or pull the wool, as this causes a bloodshot spot on the carcass which detracts from the appearance of the carcass and from the keeping qualities in the meat. A much neater and cleaner job of dressing can be done if the lamb has been kept in a well bedded pen so the fleece is clean and dry.

The only equipment necessary in dressing lambs is a low table or bench, some stout string and a good skinning knife. Where working alone, it is well to place the lamb on a bench or table and tie the legs,

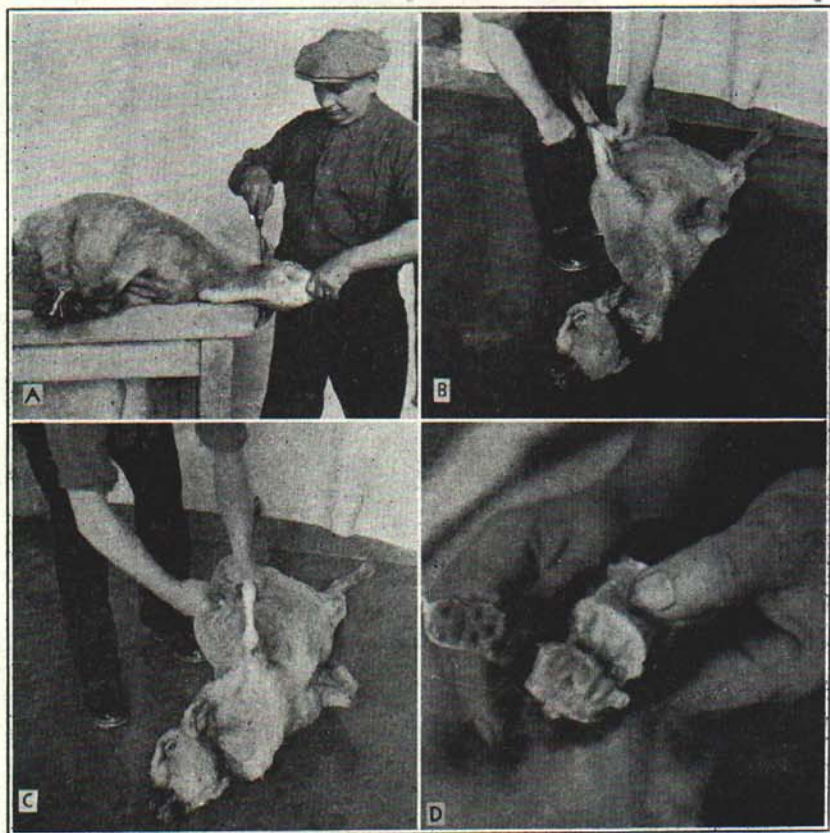


Fig. 17.

- A. Sticking.
- B. Starting to remove pelt.
- C. Removing foot just above ankle.
- D. Right round joint. Left break joint, which identifies a lamb.

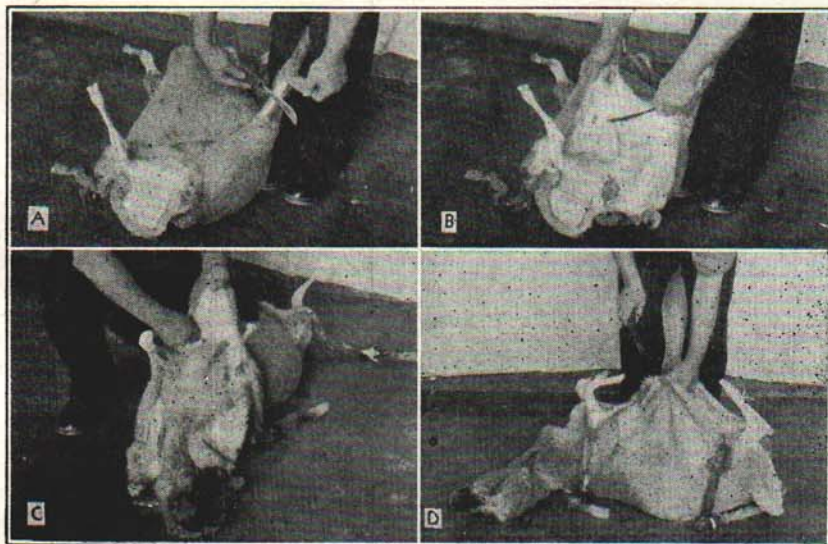


Fig. 18.

- A. Skinning rear legs.
- B. Removing pelt from quarters and over cod or udder.
- C. Fisting off pelt.
- D. The fisting of pelt completed and rear legs tied together.

then grasping the jaw with the left hand, the head is pulled back and the knife pushed through the neck just back of the jaws and below the ear (Fig. 17-a) and the cut made away from the operator, completely severing the gullet and windpipe. Placing the lamb upon a bench or table of this kind keeps the fleece free of blood and dirt and permits clean dressing.

Removing the Pelt

In skinning a lamb, one should grasp the hide just above the knee of the animal with the toe held between the operator's knees, and a strip of skin removed from a point above the knee to the toes, (Fig. 17-b). An incision is then made forward on the forearm to a point on the midline about four inches ahead of the brisket and from that point on the middle of the neck to the incision where the throat was cut. The hide is then skinned back on the side of the shoulder and neck so that the pelt will lay away from the carcass (Fig. 17-c). The cut also shows the operation of removing the front leg, which is taken off just above the pastern or at the square joint. By cutting across the tendons on the back of the leg, as the operator is doing in Fig. 17-c, and then bending the toes forward, the leg is broken at the break joint, which identifies the carcass as that of a lamb. The break joint in

a lamb has a serrated saw-tooth appearance and is porous or vascular and red in color. Figure 17-d shows on the left the lamb break joint and on the right the round joint at which the leg is usually removed on old sheep.

Next, going to the rear end of the lamb with the toes again held between the operator's knees, a strip of skin is removed from the rear of the leg and an incision in the hide made from the point where this was started to the middle of the buttocks and the hide skinned out over the leg and round, so that it again falls away from the carcass (Fig. 18-a). The rear feet are removed at the round joint found just above the hoof. The hide is next removed over the cod or udder shown in (Fig. 18-b).

The remainder of the skinning operation is very largely a matter of fisting, as a much better job can be done in this way than when the knife is used. With the operator's knee against the stomach of the animal, grasp the point of skin forward of the brisket and pull backward (Fig. 18-c), then with the folded fist go back to the middle of the underline at least, or possibly clear through, then from the middle of the underline work down on the side and then forward forcing the front leg forward and coming up on its side. Always remember to keep the fist closed, working very largely with the point of the thumb, which is kept tight against and pressed toward the hide so as not to break the membrane covering the carcass. After skinning forward over the shoulder, one should start fisting to the rear keeping rather low at the middle of the carcass and working up toward the rear so that the rear leg is pressed out and extended, care being taken not to break through the membranes at the flanks, which the operator will almost invariably do on his first attempt. This operation is then repeated on the other side.

Figure 18-d shows the lamb practically skinned and ready to hang up. Note that the hide still covers the carcass so as to keep it clean, also that an incision has been made between the tendons and bone in the hind legs and a cord tied around by means of which the lamb can be hung over a hook. Where one is dressing outside, a piece of rope or wire tied to a short stick six inches in length and then fastened to a limb of a tree makes a very convenient means of hanging or suspending the lamb.

The first step after hanging the lamb is to finish the fisting of the hide. Note in Fig. 19-a that the hide when cut open along the underline falls away from the carcass. Continue fisting upward over the rear quarters and forward over the front legs until the hide is completely removed. The only point at which it is necessary to use the knife in completing the removal of the hide is possibly about the tail, head, or rump.

Opening Carcass to Remove Entrails

To remove the entrails, cut around the bung with the knife and tie the end with a string. Open the underline, cutting an incision through the abdominal wall just below the cod, insert two fingers in the opening (Fig. 19-b) to hold the intestines back, and, with the point of the knife between the fingers, cut through the midline to the breast bone. With a young lamb, this incision may be continued down through the brisket or breast, although with older animals, it is necessary to use a saw for this purpose. The omentum or fatty membrane covering the stomachs should be removed at this time, before it becomes soiled.

The next step is the removal of the stomachs and intestines. In doing this, one should be careful not to disturb the bed fat covering the kidneys and just above them. In other words, use a knife rather than pulling the intestines too much, and cut close to the large intestines until one is well down below the kidneys; then, by inserting the hand under the stomach, intestines, and liver, the entire mass may be readily pulled out. Next cut around the diaphragm at the line where the white mem-

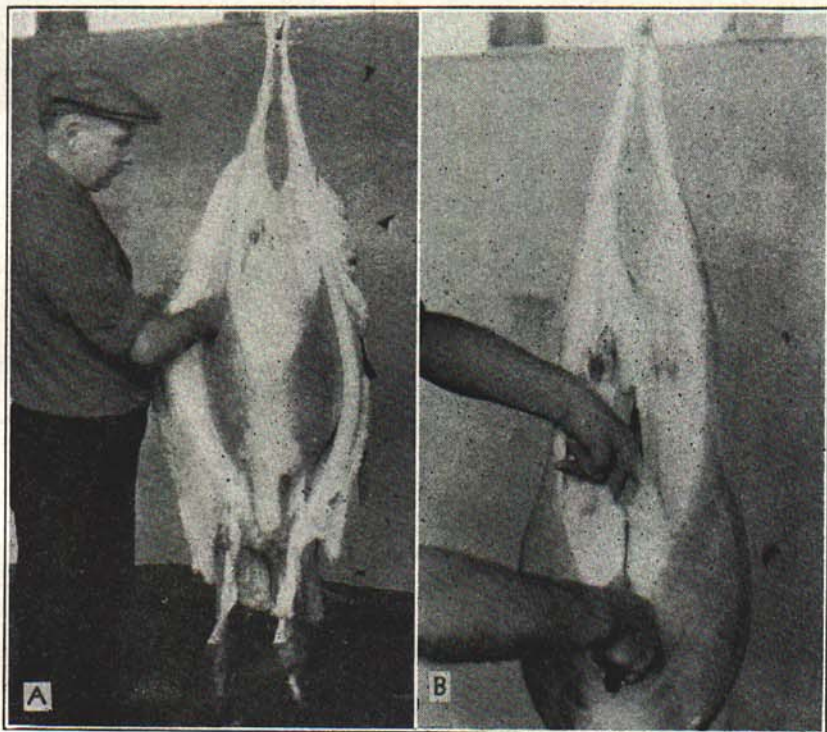


Fig. 19.

- A. Pelt split along underline and being fisted off from back.
- B. Opening abdomen.

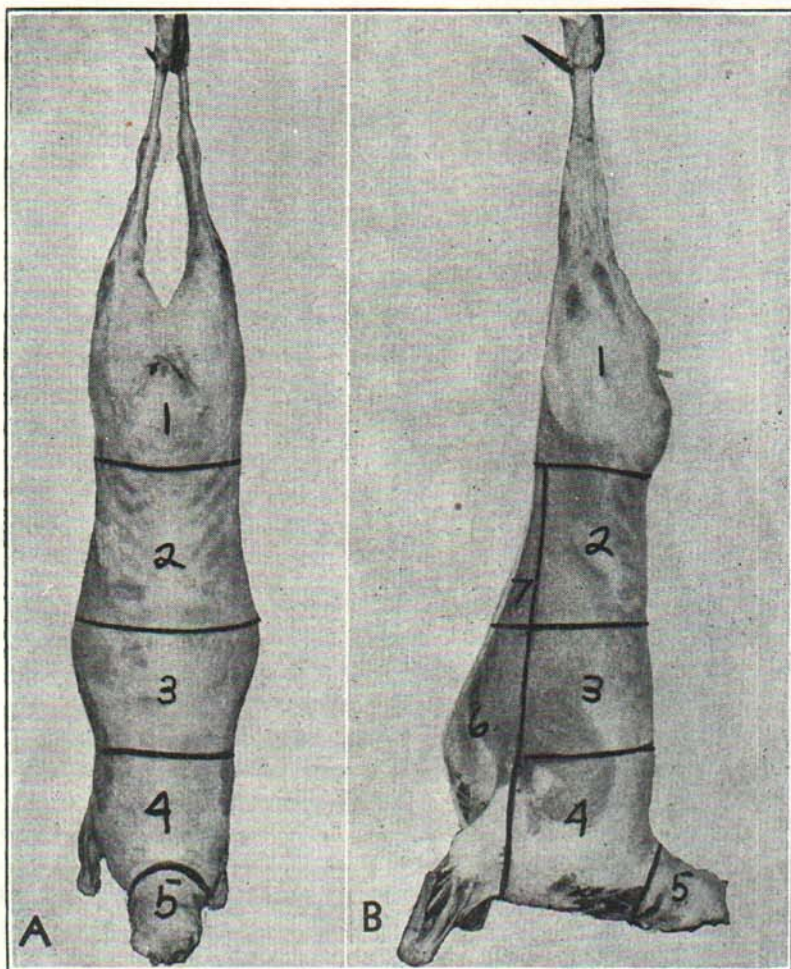


Fig. 20.

A. B. Choice Lamb Carcass Showing Wholesale Cuts.
 1. Leg. 2. Loin. 3. Rib (Hotel rack). 4. Shoulder. 5. Neck.
 6. Breast. 7. Flank.

brane joins the red muscular tissue and remove the heart, lungs, and gullet, using a knife to free the gullet the full length of the throat. The task is completed by washing the carcass with a clean cloth dipped in warm water and wrung out well before applying to the carcass. If the hands are kept clean, the carcass should need practically no washing.

The last step is the splitting of a small amount of the fascia (white membrane) covering the rear of the front leg and folding back the leg with the end placed under this, thereby giving the carcass a more compact and tidy appearance (Fig. 20-b).

Cooling the Lamb Carcass

The lamb carcass, because of its small size, cools very rapidly and does not require as low temperature for proper cooling as either the beef or pork carcass. In warm weather, a lamb may be dressed in the evening and will be cooled in the morning to a point where it can be cut up and placed in the refrigerator. Greater satisfaction will be obtained from the use of lamb on the farm if proper methods of cutting are followed and each wholesale cut is used for the purpose for which it is best adapted.

Cutting the Lamb Carcass

Figures 20-a and b show the proper method of dividing the lamb carcass into wholesale cuts: (1) is the leg of lamb, most desirable for roasts, although it may be cut into chops or steaks if desired; (2) is the loin, most frequently used as chops, although the sirloin or rear end makes a very desirable roast when boned out; (3) is the hotel rack

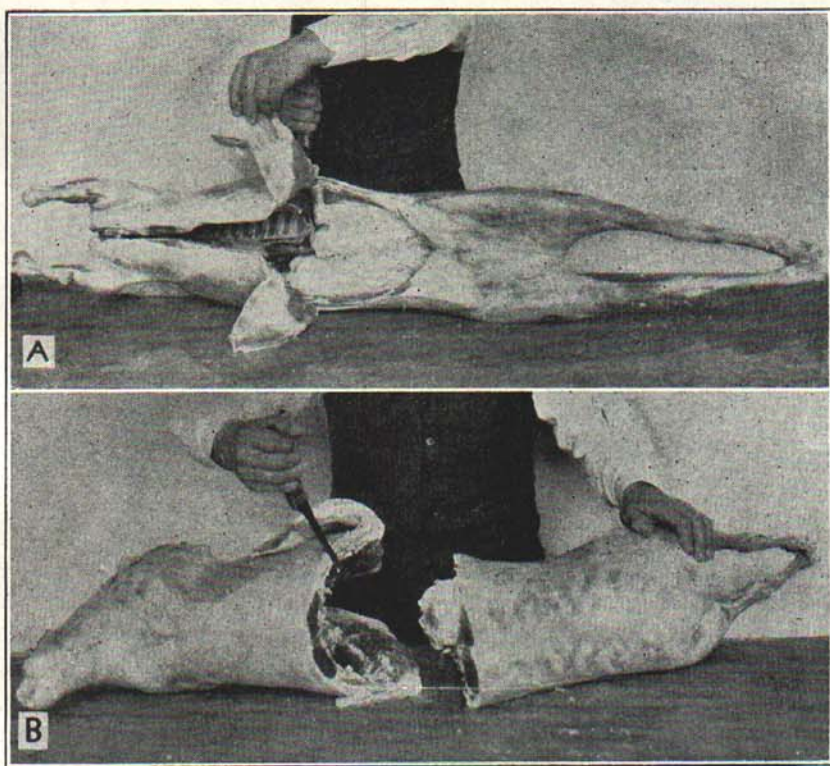


Fig. 21. Dividing carcass into saddle (rear quarters) and rack (front quarters), often called hind saddle and fore saddle.

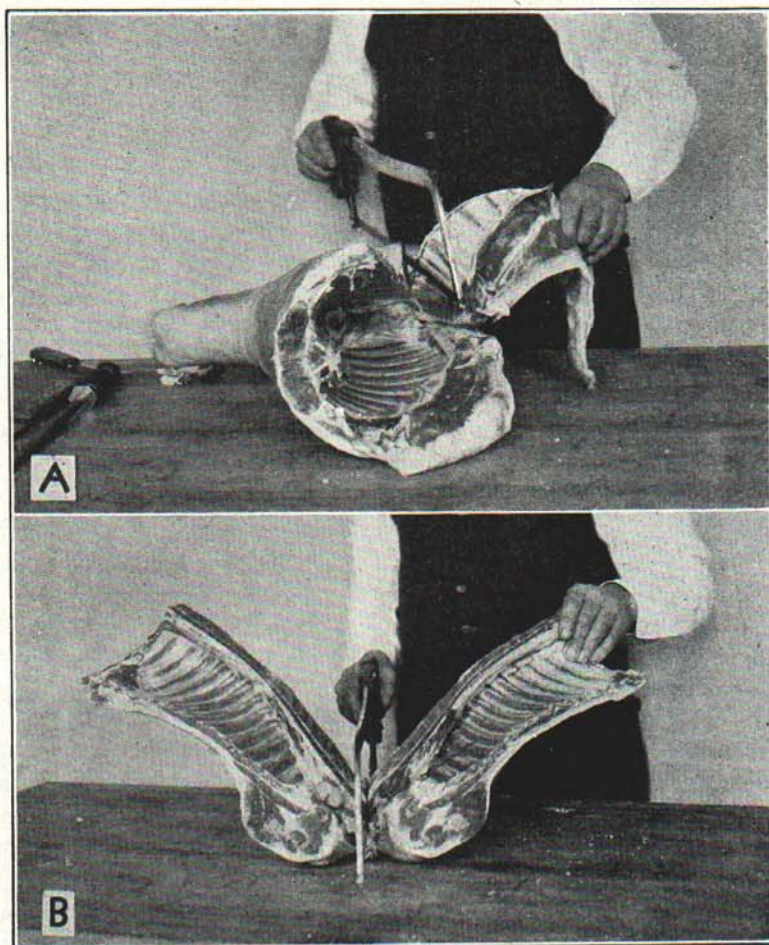


Fig. 22.

- A. Removing the breast.
B. Separating the quarters.

or rib, which is usually sold as rib chops, although there is nothing more appetizing, palatable, or attractive than a well prepared crown roast made from this cut; (4) is the shoulder of lamb. This cut may be used as shoulder chops or boned out and rolled, in which condition it makes a very satisfactory roast; (6), which is the breast of lamb gives the most satisfaction when used as stew meat. In cutting the lamb carcass, it is first divided into the saddle and rack, or as it is sometimes called, the hind saddle, including the legs, loin and flank; and the fore saddle, including the breast, ribs, shoulder, and neck. The proper separation of the fore and hind saddle is shown in Fig. 21. The

flank is first lifted starting just forward of the cod or udder and cut forward to the last rib. This rib is then followed around to the back where the front and rear parts are separated.

The Fore Saddle

The next step shown in Fig. 22-a is the removal of the breast and brisket from the forequarters. The point at which this should be taken will depend very largely upon one's preference in rib chops. After the removal of the breast, this may be cut into small pieces for stew or may be boned and rolled. Figure 22-b shows the separation of the ribs and shoulders by means of sawing down through the backbone. When it is desired to make a crown roast, the last eight ribs (five ribs being left on the shoulder) are taken off between the fifth and sixth ribs before the front is split in two. With both ribs together, a more satisfactory crown roast can be prepared. This cut is prepared by sawing across the ends of the ribs on either side of the backbone and removing the backbone and spinal processes without cutting through the fleshy covering over the back. Next, a strip of meat about one and one-half inches long is removed from the outer ends of the ribs, the rib fingers cut out and the two ribs then folded together and tied at the ends. The placing of paper frills on the ends of the ribs completes the roast (Fig. 23). When a crown roast is not desired, the most satisfactory method of using the ribs is to make rib chops from them.

When the shoulder is not to be used as chops, it makes a much more satisfactory roast if boned and rolled. The first step is the lifting and removal of the ribs and neck bone, similar to the removal of spareribs from pork. Then, with the shoulder lying on the block, with the outside down and the rib side up, a start is made at the arm bone on the lower edge of the shoulder and an incision made from the arm bone to the point where it joins the shoulder blade, around which a knife can be pressed and the removal of the arm bone completed. From this point, a cut is made the full length of the shoulder blade and the meat lifted, keeping the knife very close to the blade bone. Next, the joint end of the shoulder blade is grasped with the left hand and with the knife in the right hand the meat is scraped or cut away from the end of the ridge bone, following which the shoulder blade may be pulled out, and the shoulder can be rolled into a neat compact bundle and tied.

The Hind Saddle

The hindquarter or rear saddle is very easily handled as it consists of only the loin for chops and the leg for roasts. The exact point at which the loin should be removed from the leg will depend upon the weight of the lamb and the size of the roast desired. With heavy

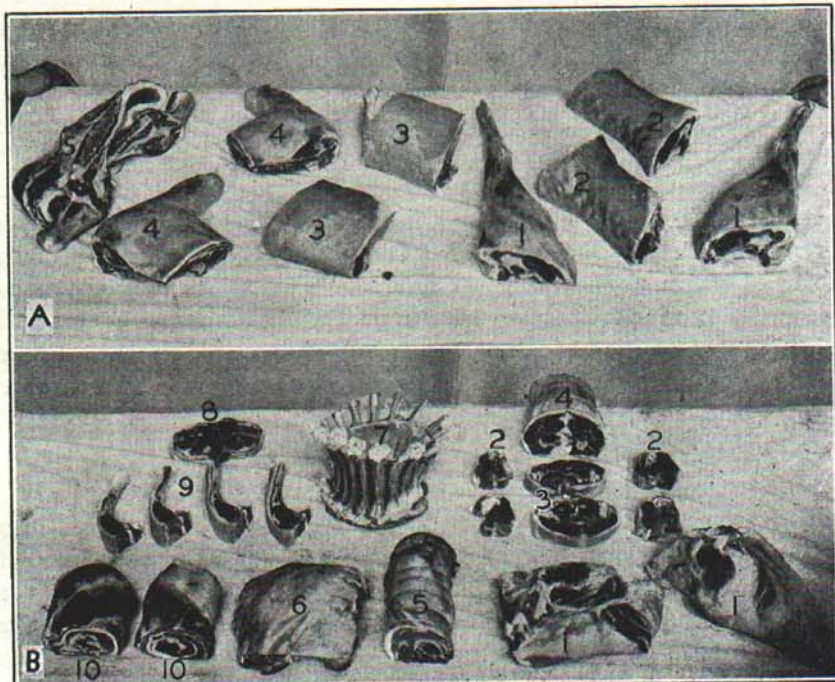


Fig. 23.

- A. Wholesale cuts of lamb.
B. Retail cuts of lamb.

Fig. 23a.

1. Leg of lamb
2. Loin
3. Ribs
4. Shoulder
5. Breast

Fig. 23b

1. Leg of lamb
2. Loin chops
3. English loin chops
4. Sirloin rolled
5. Boned and rolled shoulder
6. Cushion style boned shoulder
7. Crown roast
8. Neck slices
9. Rib chops
10. Boned and rolled breast

lambs, the loin is frequently taken off at the same point at which it is removed from beef or through the true hip joint. With light lambs, the loin is frequently cut off forward of the pin bone or at a point that would correspond with the middle of the loin as outlined in Fig. 20-a. Where one desires large chops, both sides of the loin are frequently left as one piece without splitting, the rear end of the loin being boned and rolled as a sirloin roll and the forward end is cut into English lamb chops, or the two loins may be divided and cut into chops (Fig. 23). The legs are then separated into left and right and may be trimmed and finished as an American leg or as a French leg. In the preparation

of the American leg of lamb, the meat is trimmed from the shank, the bone removed at the stifle joint and the shank meat folded forward under the fascia and fastened in place with a wooden skewer. In the French style leg of lamb, the shank meat is cut off about three inches above the hock and a break joint made about one-half inch above the hock. This leaves a handle for carving in the form of two and one-half inches of the leg bone, on which a frill may be placed. Another method of preparing the leg, and one which facilitates carving, consists of the removal of the bone and tying the quarter. This is frequently done by the use of a thin, narrow-bladed knife pushed in along the bone so the outside surface of the leg is not cut to any appreciable extent. Figure 23-a shows all of the wholesale cuts as they would be made preparatory to storing the lamb carcass in the refrigerator. Figure 23-b shows the cuts as they would be made preparatory to cooking.

VEAL

While the total quantity of veal consumed averages only 7.6 pounds per person annually, still the number of producers interested is much larger than with other classes of meat. The slaughter of calves for veal is not centralized to the same extent as is the slaughter of cattle, hogs, and sheep. Nearly one-half of the veal produced is slaughtered either on farms or by local butchers.

The best grade of veal can be produced only by liberal feeding of whole milk or by allowing the calf to nurse until he is of desirable age for veal. Calves fed on milk substitutes, skim milk, or kept until they are consuming noticeable amounts of coarse feed will not produce a high quality veal carcass. The well bred, whole milk calf from four to six weeks of age and weighing between 120 and 180 pounds alive, or from 70 to 120 pounds dressed produces the best veal carcass. The skim milk-fed calf from six to 10 weeks of age sells at a severe discount on the market because of a lack of finish and thickness resulting in less flavor and a lower cutting yield. Such calves may be used at home, producing just as nutritious meat as the calf more expensively reared on whole milk. Veal cools rapidly and may be dressed out at almost any season of the year and canned for home use. Like other meat animals, the veal calf should be kept off feed for 12 hours before dressing but should have access to water during this time.

Stunning and Bleeding

A clean dry place where the entire operation of dressing can be completed without dragging the carcass about should be selected. Calves are stunned the same as a beef, although a much lighter blow is needed and a hammer is easier to handle than an axe. A much cleaner and

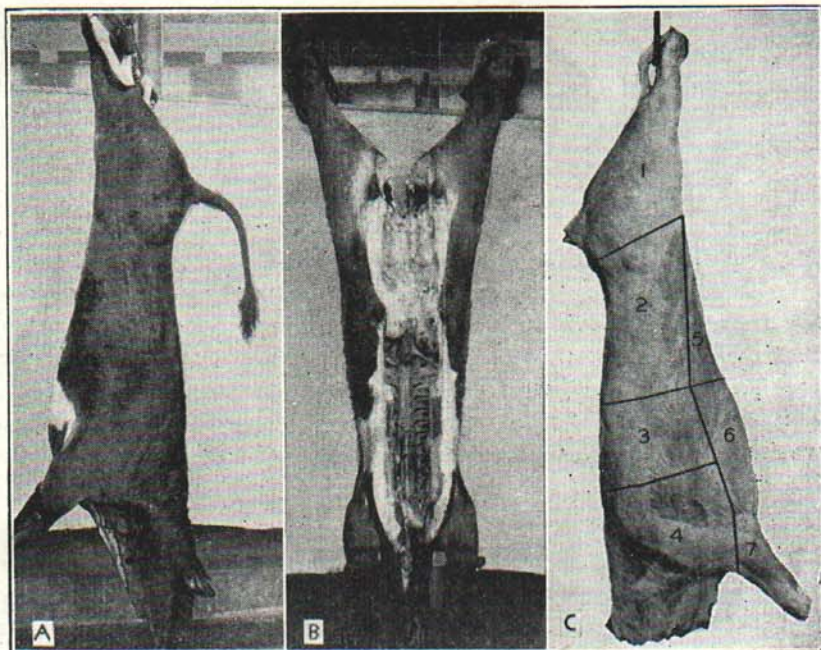


Fig. 24. Choice veal calf.

- A. Side view.
 B. Front view. Note bed fat and kidney covering.
 C. Hide removed and cuts outlined.

- | | |
|----------|-----------|
| 1. Leg | 4. Chuck |
| 2. Loin | 5. Flank |
| 3. Rib | 6. Breast |
| 7. Shank | |

more satisfactory bleeding is obtained when the calf is suspended by one foot with a block and tackle. The calf may be bled by cutting across the throat just back of the jaws or it may be stuck by slitting the throat from breast to jaws as described for beef on page 16. Many prefer the first method, as the sweet breads lying on either side of the windpipe are kept clean and a much smaller area soiled with the blood.

Most markets require that veal carcasses be dressed "hog style" with the hide on, the underline opened from tail to throat and the head and feet off. Leaving the hide on protects the carcass from evaporation, or from drying out, and from contamination during shipping. The carcass also has a bright color and fresh appearance when skinned out just before being used.

When veal is being dressed for home use, especially during warm weather it is best to skin the calf at once, following the same method as in skinning beef, described on pages 16 to 23. The skin is more

easily removed while the carcass is still warm, the carcass will cool more rapidly, and as soon as the animal heat has been removed the carcass may be cut up and placed in the refrigerator. Low prices for calf skins result in an increased demand for calves dressed with the hide off.

"Hog-dressed" Calves

A "hog dressed" calf is prepared by skinning out the head and removing it at the atlas joint. Each leg is skinned out to a point just above the knee or hock and the legs are removed at the square joint as described for beef on page 18. A gambrel is then inserted between the tendons and bone just above the hocks and the carcass elevated until it swings clear of the ground. The hide should then be brushed or washed clean and any blood stains about the neck and legs removed with a damp cloth.

Removing the Viscera

With a sharp knife, cut entirely around the bung and tie the upper end. Open the underline from the pelvic bone to the breast bone, free the large intestines, and draw the rectum down through the opening. Remove the paunch and intestines together by cutting the gullet where it comes through the diaphragm. The bed fat of the pelvic region and over the kidneys should be left intact in the carcass. The gall bladder is removed but the liver is left when the carcass is to be marketed. Loosen the windpipe and gullet from below so that they may be drawn out with the pluck. The diaphragm, separating the abdominal and thoracic cavities is loosened by cutting entirely around the cavity at the front where the white membranes join the red muscle. The pluck, heart, lungs, and gullet, are then removed. The job is completed by wiping the inside of the carcass clean and removing all blood stains

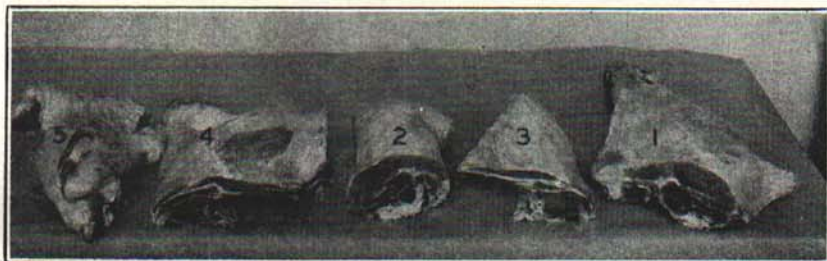


Fig. 25. The wholesale cuts of veal.

1. Leg
2. Loin

5. Shank and Breast

3. Rib
4. Chuck

with a damp cloth. With heavy calves, the underline is best opened its full length, cutting through the breast bone with a knife or saw and through the pelvis between the quarters.

After thoroughly cooling, the veal carcass is prepared for shipping by tying the skin removed from the legs back over the knees and hocks, the skin from the head back over the neck and wrapping with heavy paper or burlap. Some markets require that the pluck be left in the carcass or packed in a separate parcel and shipped with the carcass. Any one contemplating the shipping of veal carcasses should consult his commission firm regarding the requirements of the market before shipping.

Choice veal calves, "hog-dressed," yield from 65 to 70 per cent, and, with the hide off, approximately 10 per cent less. Veal brains, heart, liver, and tongue are delicacies and should be utilized at home when not shipped with the carcass. Veal consists almost entirely of lean meat or muscle fibre with a higher proportion of moisture and less fat than beef, and cannot, therefore, be as satisfactorily cured or corned as beef.

Figure 24 gives three views of a choice veal carcass. The wholesale cuts are outlined in Fig. 25.

STORAGE OF MEAT BY FREEZING*

The preservation of meat in frozen food lockers and home freezer units is increasing rapidly. There is no magic about frozen food. The product taken from the locker or home unit can be no better than when it was put in and may be much worse unless carefully handled previous to and during freezing, properly wrapped and stored under correct temperature conditions. Meat which is placed in frozen storage should come from animals that were dressed under sanitary conditions and the carcasses thoroughly cooled, with all animal heat eliminated as promptly as possible after dressing.

Beef carcasses carrying a fair degree of finish may be aged or ripened for 10 days following slaughter if they can be maintained at a temperature from 33° up to 40° F. Temperatures above 40° F. will hasten the development of rancidity and result in a low grade product. Allowing the meat to freeze and then thawing it to cut and wrap for storage results in the loss of juices and the drying out of the meat.

Pork carcasses intended for freezing should be thoroughly cooled within 24 hours and cut, wrapped and placed in storage within 48 hours after dressing, if the highest quality of product is to be obtained.

Lamb carcasses after being thoroughly cooled, may be held for as

*Detailed directions for preparing meat for freezing are contained in Extension Bulletin E-223, "Preservation of Meats and Poultry in Frozen-Food Lockers." A copy may be obtained from the Michigan State College Bulletin Office, East Lansing.

long as a week before being placed in frozen storage. Under proper conditions, frozen beef may be held for a year; lamb from 6 to 8 months; and pork from 3 to 6 months. Meat held longer may become rancid and unpalatable and if held too long before freezing or stored under improper temperature conditions may become rancid within 60 days after freezing. Best results are obtained when carcasses intended for freezing are taken to a packing plant or frozen food locker and stored under proper temperature conditions until cut and frozen.

Cutting and Wrapping

The meat should be prepared in steaks and roasts ready for cooking, each package containing the amount desired for one meal. Storage space will be conserved and wrapping made easier by the removal of the bones. The wrap for all cuts including steaks should be flat and as nearly airtight as possible and should consist of a moisture proof cellophane wrap adjacent to the meat with the edges carefully folded in ("drugstore wrap") and then wrapping again with a paper waxed on one side, with the waxed side toward the meat, carefully folded to exclude the air, and then stapled or tied with string. (The use of staples gives a tighter, neater package.) Careless wrapping or the use of wrapping materials which are not moisture proof will permit the loss of moisture and cause "freezer burn". Each package should be labeled showing the date and contents and if intended for commercial storage in a freezer locker, should also show the name and locker number of the individual. The meat should be frozen as soon as possible after wrapping.

Freezing

The capacity of the freezing unit should be such as to insure the rapid freezing of any material placed in the unit and without too much of an increase in temperature of the box. Best results are obtained when racks are available to separate the various packages and permit a free flow of cold air about them while they are being frozen.

Storage

Best results in storage are obtained when the temperature is zero or below with as little fluctuation as possible. A box with a small temperature differential or one in which the temperature of the cooling liquid is not materially lower than the temperature within the storage chamber is desirable. A high temperature differential results in excessive frosting and the withdrawal of moisture from the frozen product, thus drying it out and resulting in what is generally called "freezer burn."

CURING MEAT FOR FUTURE USE

Curing Agents

The secret of meat curing, if any, is in using just the right quantity of salt and in allowing sufficient time for the salt to penetrate the meat. Salt is the most essential ingredient used in curing all classes of meat and a good grade of coarse or barrel salt should be used because table salt is often unsatisfactory. Excessive amounts of salt will injure the flavor of the meat and harden the muscles. When too little salt is used, or if the meat is not left long enough in the cure, bacterial action will set in, resulting in spoiled meat.

Sugar is used to counteract the hardening effect of salt and to improve the flavor and texture of the meat. Granulated sugar, brown sugar, or molasses may be used, depending upon the flavor desired.

Saltpeter assists in preserving and drying the meat, but because of its medicinal effect, cannot be used except in small quantities to fix or preserve the red color of lean meat. Two ounces of saltpeter per 100 pounds of meat is all that should be used. In dry-curing meat, pepper may be used because of the flavor imparted, but it is not a curative agent.

Small quantities of baking soda are sometimes used to counteract the tendency of brine to sour when temperature conditions are not right.

Receptacles

An earthenware crock makes the most satisfactory receptacle for curing meat, although a clean hardwood barrel which is free from any odor may be used. In no case, should a cracked crock or barrel, which has ever contained spoiled meat, be used. Meat which is being cured should be stored in a clean, dry, well ventilated room. A temperature around 40° F. is preferable. Meat does not absorb the curing agents readily at freezing temperatures and at high temperatures may spoil before the curing ingredients have penetrated it.

Methods of Curing

There are two methods of curing, dry salting and brine curing. The same ingredients are used in either case, the difference being that, in the one, the curing agents are applied to the meat, and, in the other, are dissolved in water and the meat is immersed.

The dry cure is more rapid, requires less equipment, gives a stronger cure or salt flavor, and results in a heavier shrinkage or drying out of the meat. The brine cure produces a milder flavor more acceptable to

most tastes and there is less shrinkage in curing. A plain salt or a sugar cure may be used with either method.

After being thoroughly cooled out, the carcass is cut as previously described. Each piece of meat to be cured is rubbed with coarse salt. Care should be taken to force some of the salt into the meat next to the bones at both ends of the hams and shoulders. The salted meat is piled on a table for 20 hours to drain, after which the surplus salt is rubbed off. It is then ready to be cured by using any one of the following recipes.

PLAIN SALT PORK (BRINE CURED)

When it seems desirable to keep pork in brine throughout the summer or until it is used, a plain salt pickle will be found most satisfactory.

For each 100 pounds of meat, use:

- 10 pounds of salt
- 2 ounces of saltpeter

Dissolve the above ingredients in 4 gallons of water. Many writers advise the use of boiling water, or even of boiling the brine, and allowing it to cool before pouring over the meat. With pure water and clean curing agents, it is not necessary to boil the brine or to use hot water.

Pack the meat in an earthenware crock or in a clean hardwood barrel, placing the heavier hams and shoulders at the bottom, skin side down, and the lighter pieces on top. Cover with brine and weight down with a hardwood board and stone, making sure that the meat is completely covered. The meat should be inspected and repacked at the end of the first and second week. Thereafter, the brine should be watched closely to see that it does not become cloudy in color or ropy. It should be tasted occasionally to see that it is not souring. In case the brine should spoil, the meat should be removed, washed in tepid water, the receptacle thoroughly cleaned and new brine made using about two-thirds the quantity of curing agents first used.

PLAIN SALT PORK (DRY CURED)

The preparation of dry salt pork offers less difficulty than any other method of curing. This method should not be used with lean, light weight hams, shoulders, and bacon strips, as they will be too salty to suit most tastes and the lean meat is hardened by the salt. Fat backs, jowls, and heavy fat side pork may be cured by this method.

For each 100 pounds of meat, use:

- 10 pounds of salt
- 2 ounces saltpeter

Rub each piece of meat with the curing mixture. Pack in a box or barrel which has drainage in the bottom. Place some of the curing mixture on the bottom of receptacle. Place a layer of meat, then sprinkle liberally with salt and continue until meat is packed. Cover with salt and leave in pack until used. When removing pieces for use, that remaining should be completely covered with salt.

SUGAR CURING (BRINE METHOD)

For each 100 pounds of meat, use :

- 7 pounds salt
- 2 pounds sugar
- 2 ounces saltpeter

Dissolve in 4 gallons of pure, clean water, pour over the meat in the receptacle as already described, and weight down. In curing small quantities of meat or when it is not well packed, one may need to use more water to get sufficient brine to cover the meat. If the brine is diluted to a point where it will not float an egg or potato, more salt should be added. Inspect and repack the meat at the end of the first and second week. The brine should be checked each week thereafter to see that it is not spoiling. If it should become ropy, cloudy, or sour, the meat should be thoroughly washed, the receptacle cleaned, and a new pickle made.

Time in Cure

Hams and shoulders should remain in the cure from 3 to 3½ days for each pound that they weigh and bacon strips 2 to 2½ days for each pound of weight. Meat to be used during the winter season may be given a mild cure by reducing the time in the brine or by using less salt.

When removed from the brine, the meat should be soaked in tepid water for from 30 minutes to one hour to remove the surplus of salt near the surface. It is often desirable to leave all of the meat including bacon strips, shoulders, and hams in the brine until all are cured. When this is done, the bacon strips may be soaked from two to three hours and the water changed several times to remove the surplus salt.

After soaking and washing, string and hang up to drain for 24 hours before smoking.

SUGAR CURING (DRY METHOD)

For each 100 pounds of meat, use :

- 7 pounds salt
- 2 pounds sugar
- 2 ounces saltpeter

Pulverize the salt and saltpeter and mix with the sugar. Thoroughly rub the meat on all surfaces with one-third of the mixture, forcing some of the cure in around the bones of hams and shoulders. Pack the meat in a box or barrel, skin side down, with the heavier pieces on the bottom. After five days, remove the meat and rub with the second one-third of the curing mixture and repack for another five days, when the remainder of the cure should be applied and the meat repacked. When a box or barrel is not available the meat may be stacked on a table but it will dry out more than when packed in a box or barrel.

Bacon strips should be left in the pack two days, counting from the first application, for each pound that they weigh. Hams and shoulders require three days for each pound of weight. As a rule, about two weeks for bacon strips and four weeks for the heavier pieces is sufficient. With small, lean cuts of meat and correct temperature conditions, 5 pounds of salt will cure 100 pounds of meat. Meat cured in the fall for winter use may be given a mild cure by using a smaller amount of salt and possibly reducing the time in cure. With heavy pieces, or in the case of meat to be held for summer use, the stronger cure should be used.

After completion of the cure, the meat should be washed in tepid water to remove any surplus salt and hung to drain for 24 hours before smoking.

Corned Beef

Beef can be cured as readily as pork, but ordinarily cannot be kept as long. Beef has a larger percentage of lean meat and becomes harder and develops a stronger salt flavor than does pork when left in the brine. There is also greater risk of the brine's souring with beef than with pork. Corned beef, left in the brine during warm weather, must be watched very carefully to avoid danger of spoilage from sour or ropy brine.

The cheaper, fatter cuts, such as the flank, plate, chuck, and rump make excellent corned beef. Remove all bones and, to facilitate packing of even layers, cut into pieces four to six inches square of uniform thickness. For each 100 pounds of meat, use 8 to 10 pounds of coarse salt, using the larger amount during the spring and summer months. Sprinkle a layer of salt on the bottom of a barrel or crock that has been thoroughly cleaned and scalded. Place a layer of meat, rubbing some salt on the sides of each piece, packing them closely together and cover with salt. Add alternate layers of salt and meat until it is all packed. Cover with salt and allow to stand for 24 hours.

For each 100 pounds of meat prepare a brine by dissolving in 4 gallons of water:

- 4 pounds sugar
- 2 ounces saltpeter
- 2 ounces baking soda

Pour the solution over the meat, using a weighted cover to keep the meat submerged. The corning process will be complete in from 30 to 40 days. The meat may be kept in the brine until used, removed from the brine, washed, drained, and smoked or canned.

Dried Beef

Dried beef should be made from the heavier muscled cuts, such as the round or chuck. The round is often divided lengthwise following the seams which naturally divide it into inside, outside, and knuckle, giving a set of dried beef. The meat is first cured exactly as described for corning. After removal from the pickle, it is washed, strung, and hung up to drain for 24 hours. When through dripping, it may be dried by hanging in a dry room or near a chimney where the moisture will all evaporate. Care must be exercised to keep it protected from flies while drying. A more satisfactory method is to hang the beef up to dry for from one to two days and then smoke for from 70 to 80 hours at a temperature of 130 to 140° F.

Beef may be cured by the dry method, similar to the dry curing of pork.

For each 100 pounds of meat, use:

- 6 pounds salt
- 3 pounds sugar
- 2 ounces saltpeter

Mix thoroughly, and divide into three portions. Thoroughly rub all surfaces of the meat with one portion of the cure and pack the meat tightly in a clean, scalded crock or barrel. After three days, remove the meat and rub well with a second part of the curing mixture. Repack, placing the pieces which were on the bottom of the pack on top. After three more days, again remove to apply the last of the curing mixture and repack. Leave in the cure for five or six days. The juices which collect in the crock or barrel should be left there to aid in the cure.

After removing from the cure, wash, string, hang to drain for 24 hours, and either smoke or dry as already described.

Lamb

Lamb and mutton may be either dry- or brine-cured. Owing to the small size of lamb cuts and the high percentage of lean, they absorb salt more rapidly, and develop a stronger salt taste than does either beef or pork. The dry cure should be used only for the heavier pieces, such as the leg or shoulder. The brine methods may be used to preserve any cuts which cannot be immediately used fresh. Where either mutton or lamb is to be preserved for any considerable period of time, canning is the most satisfactory method of preservation.

Success in curing meat may be achieved by those who will follow carefully the few simple directions already given.

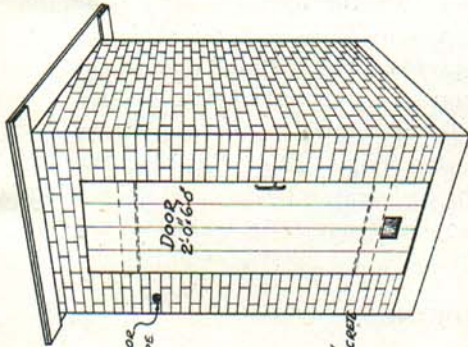
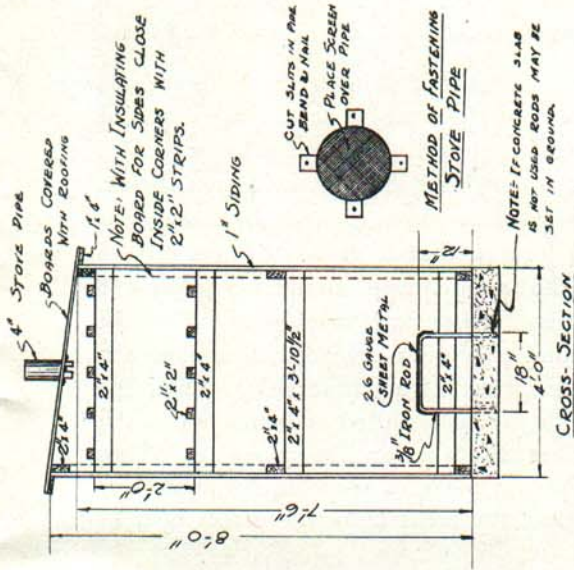
Reasons for Failures in Meat Curing

Unsatisfactory results may be due to any one or a combination of several factors—all of which are easily controlled. Among these are the following:

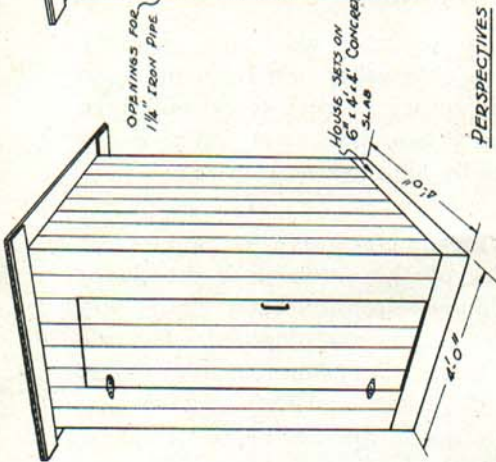
1. Failure to properly bleed the animal when dressing.
2. Improper cooling of the carcass due to high temperatures or insufficient circulation of air.
3. Allowing carcass to freeze before all of the animal heat has been eliminated.
4. Allowing meat to become tainted before starting the cure.
5. Use of cracked crocks or barrels which have contained spoiled meat.
6. Failure to clean and scald receptacles before packing meat.
7. Use of insufficient amounts or of impure curing agents.
8. Failure to protect meat from flies, either before, during, or after curing.
9. Too high a temperature or allowing meat to freeze. Frozen meat will not absorb the curing agents.
10. Failure to watch brine and to change at first indication of spoilage.

Smoking Meat

Smoking will not preserve meat and will in no way take the place of proper curing. Smoking does give a desirable color and a more satisfactory flavor. It also dries the meat and in this way may aid in some measure the keeping qualities. Properly cured meat will, however, keep without smoking.



BRICK



PERSPECTIVES

WOOD OR INSULATING BOARD

BILL OF MATERIAL - BRICK

ITEM	No Pcs.	SIZE
CEMENT	6 Sacs	
GRAVEL	1 1/2 C.Y.	
SAND	3/4 C.Y.	
BRICK	975	
DOOR	5	1'-6" x 7'-0"
DOOR FRAMING	2	2 1/2" x 4" x 7'-0"
ROOF	11	1 1/2" x 4" x 8"
HANGERS	2	1" x 4" x 11"
IRON PIPE	10	2 1/2" x 3'-10 1/2"
DOOR HINGES	1 Pa.	3" x 3"
SHEET METAL (DO)	1	18" x 28"
IRON ROD	2	3/8" x 4'-0"

BILL OF MATERIAL
WOOD OR INSULATING BOARD

ITEM	No Pcs.	SIZE
CEMENT	2 Sacs	
GRAVEL	1 1/2 C.Y.	
SIDING	150 B.M.	1'-6" x 4'-8"
BRACES	10	2 1/2" x 3'-10 1/2"
DOOR	5	1'-6" x 7'-0"
ROOF	11	1 1/2" x 4'-8"
HANGERS	2	1" x 4" x 11"
HANGER SUPPORT	4	2 1/2" x 3'-10 1/2"
DOOR HINGES	1 Pa.	3" x 3"
SHEET METAL (DO)	1	18" x 28"
IRON ROD	2	3/8" x 4'-0"
NOTE: WITH INSULATING BOARD FOR SIDING,		
DECKST.	Siding & AIR	
CORNER STRAPS	4	2 1/2" x 1'-0"
INSULATING BOARD	3	8" x 40" x 1'-0"
	1	6" x 4'-0" x 7'-6"

Plans for the construction of a smokehouse.

SMOKEHOUSE

Any tight building screened to exclude the skipper fly will serve as a smokehouse. Where not more than four hogs are being cured, a smokehouse 4 feet square and 8 feet high will give ample capacity. It may be a permanent fire-proof structure built of cement blocks, brick, or tile. A frame building, made of matched lumber with an earthen or cement floor, is satisfactory if so located that it does not constitute a fire hazard to other buildings. The smokehouse should be at least 8 feet high with an opening in the roof to permit the escape of smoke and with an intake near the ground to give a free circulation of air. These openings should be covered with a 24-mesh screen. When the house is built, at least four 2 x 4s should be installed, 6 inches below the top of the side walls and another set 2 feet below the upper set. Two tiers of meat can be hung on these. A piece of sheet metal should be installed above the fire pot to protect the meat from the direct heat of the fire.

After washing and stringing, the meat should be hung in the smokehouse and allowed to drain for 24 hours before the operator starts the fire. To permit free circulation and access of smoke to all surfaces, the meat must be so placed that no two pieces touch. Hams and shoulders are strung through the shank. Bacon strips should have a wooden skewer run through the width of the flank, or small end, and the string inserted just below it in the center of the strip. This will keep the piece square while it is hanging. In stringing meat, a heavy cord should be used and made into a loop, extending at least four inches above the meat.

WOODS FOR SMOKING

Hickory or hard maple is the most desirable wood for smoking. When one of these is not available, apple or other non-resinous wood may be used. Corn cobs are also satisfactory. Green wood will burn longer, give more smoke and less heat than dry wood. Where dry wood is used, the fire should be partially smothered with damp sawdust from hardwood.

No definite rule can be given as to the time required to smoke meat as this will depend upon the intensity of the smoke and the flavor desired. Where the smoking is continuous, from 30 to 40 hours will give a desirable color and flavor. Best results are obtained when the temperature of the smokehouse can be maintained between 110° and 120° F. Where meat is being prepared for sale and immediate use as is the case in packing plants, the operation is speeded up to avoid excessive shrinkage. On the farm, when the curing is being carried on

during the cool weather of early spring, the smoking process may extend over a period of three or four weeks, a small fire being built each day. Under these conditions, the meat dries out more completely and has better keeping qualities.

Cured beef, being prepared for dried meat, should be smoked from 70 to 80 hours.

TEST SMOKED MEAT

Meat which has not been properly cured may start to spoil while in the smokehouse or while drying. Before storing, each piece should be tested by inserting a ham trier along the bones in each end of the hams and shoulders. Any clean piece of metal stiff enough to penetrate the meat will serve as a trier. If it brings out a sweet, smoky odor, the meat is in good condition. Unpleasant odors indicate that spoilage has started. Puffiness or fullness in the ham is usually an indication of spoilage.

STORING SMOKED MEAT

No entirely satisfactory method of storing smoked meat for long periods of time has yet been discovered.

With a well ventilated, fly-proof smokehouse so located that it does not become too warm, the meat may be left hanging in it and given a light smoking occasionally. Meat stored in this way will become very dry and hard.

When not stored in the smokehouse, the meat should be hung in a dry, well ventilated room, screened against flies for one week following smoking. It may then be securely wrapped in heavy paper sacks, placed in a box and covered with clean, dry salt. If kept dry, such meat will not absorb any of the salt. Another method commonly followed is to bury the carefully wrapped meat in a bin of oats or bran.

Good results have been obtained by first wrapping the meat in cheesecloth and then heavy paper, letting the string extend through the wrapping. Then place in a flour sack, starched to exclude air, and tie the top of the sack securely around the string, leaving enough of the string free above the sack to hang the meat. Hung in this way, the meat hangs loosely in the sack which keeps dry and does not attract insects. It should be hung in a dry, well ventilated room. Meat stored by any of these methods will shrink considerably and is inclined to mold. As a rule, mold can be rubbed or trimmed off without serious loss.

Satisfactory results have been obtained by the following method: Following smoking, the meat is hung in a dry, well ventilated room for one week and, on a cool day, is dipped in melted beef tallow. The tallow congeals on the cool meat and forms a coating on it. After one

hour, a stockinette, or a wrapping of cheesecloth, is placed over each piece and the whole is again dipped in tallow until each piece is entirely sealed. It may be necessary to dip twice at intervals of one-half hour to get a satisfactory cover. After each dipping, the pieces of meat are hung on a rod until the covering of tallow has hardened. When the tallow covering is complete and has cooled, a flour sack is placed over each piece. This is tied with a string and the meat is stored.

Hams and picnic shoulders stored in this way in March were in excellent condition one year later, revealing little shrinkage and practically no mold. While considerable tallow is required to give sufficient volume in which to dip the pieces, the amount adhering to the meat is not great and the remainder can be made into soap to excellent advantage. Either beef or mutton tallow, both of which have a high melting point, 113° F., may be used. Lard has a low melting point and is therefore not satisfactory.

Bacon does not keep so well as the heavier, thicker hams and shoulders, and should therefore be used during the spring and early summer. It is likely to turn yellow and become strong in taste after 6 months of storage.

Shoulders do not store so satisfactorily as hams and should be used first.

Hams properly stored improve with age.

MISCELLANEOUS MEAT PRODUCTS

Sausage Making

Sausage is a very popular form of meat. Its manufacture provides a means of utilizing the unattractive, but highly edible and nutritious trimmings of both pork and beef. Many forms of sausage also furnish a means of storing meat for future use and permit the handling of these meat products under conditions that will not allow the handling of fresh meat.

Many forms and different kinds of sausages are made in packing establishments, varying widely in the amounts and kinds of meat in the mixture, the seasonings used and whether or not the sausage is either cooked or smoked. Extensive equipment is necessary where sausage is made on a large scale. The trimmings and edible by-products of animals slaughtered on the farm can be converted into sausage by investing only in a meat grinder equipped with plates of different sizes for coarse and fine grinding. Many grinders can also be equipped with a stuffer attachment for forcing sausage into casings.

Pure Pork Sausage

The trimmings from which pork sausage is made should consist of approximately two-thirds lean and one-third fat. More fat is undesirable from the standpoint of cooking loss and palatability. In the case of excessively fat trimmings, the picnic shoulder or other lean cuts should be added to reduce the proportion of fat.

The meat should be either cut into small pieces or run through the grinder using a coarse plate and then should be spread out on a table and seasoned.

For each 100 pounds of meat, use:

- 1½ pounds of fine salt
- 2 to 6 ounces of ground sage
- 2 to 4 ounces of black pepper
- 1 ounce of ground nutmeg

The quantities of sage, pepper, and nutmeg may be varied to suit the taste or may be eliminated entirely.

Spread the seasoning evenly over the coarsely ground or cut meat and grind through a 1/8 or 3/16 inch plate. When casings are used, they should be stuffed immediately after the meat is ground. If the sausage is too dry to stuff readily, enough cold water may be added to make the mass dough-like when thoroughly kneaded. During the winter, fresh sausage may be kept for several weeks if packed tightly in jars and kept cool. The better method of keeping is to fry or to can.

For the sake of variety or for the utilization of exceptionally fat pork trimmings, beef may be added. One-fourth part of beef by weight, in combination with pork, makes an excellent sausage.

Bulk sausage that will fry without crumbling may be made by adding cold water, kneading until the mass becomes sticky and dough-like, packing in molds or pans and chilling before slicing.

Bologna Sausage

A great many different combinations of meat and seasonings are used in making bologna. Any clean, wholesome cuts of beef or pork may be used.

The following recipe is suggested, although it may be varied depending on the meat available and the taste in seasonings.

- | | |
|---------------------|-------------------|
| 70 pounds beef | 1½ pounds salt |
| 20 pounds lean pork | 1 ounce coriander |
| 10 pounds water | 2 ounces mace |
| 10 pounds fat pork | |

Hearts, tongues, and tripe may be used. When the meat is not all available at one time, part of the ingredients may be sweet pickled until the remainder is available.

Grind the meat through a coarse plate. Spread out thinly on a table, and sprinkle the salt and seasoning evenly over the meat. Mix thoroughly and regrind, using the fine plate. Add the water and knead thoroughly.

Pack or force the meat into casings and hang in a cool place for 12 hours. Smoke for three hours at a low temperature, not exceeding 110°. Cook for 30 minutes in water heated to a temperature of 150° to 160° F. Immerse in cold water until cool and hang in a dry place.

Headcheese

After cleaning and soaking, as described on page 11, the head, together with other parts to be used, such as the tongue, heart, feet, and trimmings, are cooked until all meat can be readily removed from the bones. Skim off all excess fat. Strain the liquor in which the meat was cooked through a colander and save for future use. Separate the meat from the bones and chop fine or run through a grinder using one-half inch plates. The skins are often used in making headcheese. They should be cooked in a sack until tender, then ground using a fine plate, not larger than one-eighth inch holes, and mixed with the other meat. Return the meat to the kettle, seasoning to suit the taste. Salt and pepper are always used. Other seasonings often used are sage, ground cloves, coriander, nutmeg, and sweet marjoram. Add enough of the liquor in which the meat was cooked to cover the meat, stirring the mass well and boil for 15 minutes. Allow to cool or set after which it is ready to slice and serve.

Scrapple

Scrapple is made from the same meat material as is headcheese but cereal flour is added. After cooking the meat, it is separated from the bones and ground or chopped very fine. After straining the broth, the finely ground meat is added and placed on the stove to boil. Any desired cereal may be used, although one consisting of four parts by weight of corn meal and one part of either white or buckwheat flour makes a tasty dish. The cereal should be added gradually with constant stirring to avoid the formation of lumps. Enough of the cereal should be added to give the consistency of thick mush. Boil for one hour with frequent stirring. Before the cooking is completed, add seasoning to suit the taste. Pour into shallow pans and cool rapidly. Scrapple is usually sliced and fried in deep fat.

Liver Sausage

Liver sausage is made from the same meat material as is headcheese, with less cooking the first time, and with 20 per cent of liver added. The material is taken from the kettle as soon as it can be readily boned. The liver is either cut into thick slices or is deeply scored with a knife, placed in boiling water, and cooked for 10 minutes. Grind the meat and liver fine and add enough of the strained liquor in which the meat was cooked to give a soft mixture. Season to suit the taste, mix thoroughly, stuff into casings or cloth sacks, and cook in boiling water until the sausages float, which requires from 10 to 20 minutes. After cooking, cool in ice water and hang up to dry.

Rendering Lard

Leaf lard makes the highest quality product, followed closely by backfat and clean, clear trimmings. The intestinal fat, ruffle fat, and the strip trimmed from the lower side of the bacon strip is of lower quality. These should always be rendered separately and labeled for immediate use or should be utilized as soap stock. The leaf fat, backfat, and clear trimmings may be rendered together. First remove the skins, cut the fat into strips and run through sausage grinder using the coarse plates. Grinding or chopping reduces the heat necessary and time required to render lard. The skin should be rendered separately.

Place the fat in a clean kettle containing a small amount of water or melted lard and heat slowly with frequent stirring to prevent scorching. Early in the process, the temperature need not be above the boiling point, 212° F. As the water is evaporated, the temperature will gradually rise to 250° F. but should not be allowed to go higher. When the cracklings turn brown and float, the rendering is practically completed. At this point, the surface of the kettle should be smooth with no bubbles rising. Bubbles indicate the elimination of water. The cracklings, if dipped out on a paddle, should fry themselves out or crumble readily in the fingers or against the side of the kettle. At this point, the cracklings will settle to the bottom of the kettle and scorch, injuring the quality of the lard unless stirring is constant. Some operators remove the kettle from the fire when the cracklings float, others when they settle. The latter method insures a more complete elimination of moisture and better keeping lard.

After the cracklings have settled, the hot lard should be strained through heavy muslin into a pan and stirred until it has cooled to a temperature of around 130° F. and, then, again strained through muslin into suitable containers.

Stored lard when exposed to the air and light becomes rancid. For this reason, the containers should be of moderate size, filled to the top and sealed with a tight cover. Mason fruit jars may be used, wrapped with paper to exclude the light, and stored in a dark, cool place.

The cracklings can be pressed through a screen covered with several thicknesses of cheesecloth or placed in a cloth sack and the remaining lard pressed out as soon as cool enough to handle. The lard thus obtained should be used first.

Leaf lard and backfat will yield from 85 to 90 per cent of finished product.

When a surplus of beef tallow is available, as much as 20 per cent may be added to the pork fat and rendered with it. The resultant product is a satisfactory cooking compound.

SOAP MAKING

Preparing Fat

When dressing animals for home use, all surplus fat from the internal organs and any trimmings from the meat should be saved, rendered as described for lard and used for soap making. In fact, the thrifty housewife can save sufficient fat from the everyday cooking operations to make all of the soap needed by the family. The best soap can only be made from clean fat that was not burned in rendering or allowed to become rancid during storage. Grease saved from meat fryings and refuse fat should be clarified before being used for soap making. To clarify fat, add a volume of hot water, at least equal to the amount of fat and place on the stove until the grease has melted. Then, set aside to cool. When the fat has formed a solid cake, it is removed and any impurities which did not settle into the water may be scraped off the bottom of the cake of fat.

Another recommendation is to heat the fat with an equal quantity of water until it starts to bubble. Then remove from the stove and add one quart of cold water to each gallon of the mixture. After the fat has solidified it is removed and the discolored material on the bottom of the cake scraped off.

To make soap use:

- 1 pound lye
- 3 quarts cold water
- 7 pounds fat

Place the lye in an enamel or earthenware dish. Add three quarts of cold water and stir with a stick until dissolved. The lye will cause the water to become hot. It should be allowed to cool to a temperature below 100° F. or to room temperature before using.

Melt the fat in an enameled dish to a clear liquid. Allow to cool to a point where it is not too hot for the hand. Pour the lye solution into the melted fat in a slow steady stream, stirring with a slow steady motion. Stir slowly for 20 minutes or until it takes on the consistency of honey and begins to set.

Pour the mixture into a shallow wooden box that has been soaked in water and lined with a damp piece of cheesecloth extending well over the edges of the box. Let stand for 24 hours in a warm room. Lift from mold by ends of cloth and cut into cakes using a fine wire or string. Store in a warm room for four weeks before using.

Both lye and hot grease must be handled very carefully. Either the lye or the freshly made soap is very caustic and may cause severe burns if allowed to come in contact with the hands.

Many brands of lye give directions on the cans for soap making, setting forth the amount of fat to be used with a can of the lye. Several of these have been tried with satisfactory results.

CANNING MEAT

FOODS AND NUTRITION DEPARTMENT
HOME ECONOMICS EXTENSION
MICHIGAN STATE COLLEGE

WHAT TO CAN—Beef, pork, veal, lamb, rabbit, and poultry may be successfully canned at home. Large game animals may be canned like beef; game birds and small game animals like poultry.

WHAT NOT TO CAN—Mixtures such as the following are not recommended for home canning; chili con carne, hash, headcheese, liver paste, scrapple or soups and stews made with vegetables.

Can only meat from healthy animals, slaughtered and handled in a sanitary way. Meat may be canned as soon as the animal heat has disappeared but is easier to handle if allowed to chill thoroughly; avoid freezing, if possible.

There are two ways of packing meat for home canning; "hot pack" and "raw pack". Do not fry meat before canning; add salt if desired, 1 teaspoonful to the quart.

For safe canning, meat must be "processed" at a high enough temperature and for a long enough time to make sure of killing bacteria that may cause dangerous spoilage; the only way to do this is in a steam pressure canner.

Hot Pack Method

1. Place pieces of meat cut into jar or can-size pieces in large shallow pan; add just enough water to prevent sticking. Cover pan; cook slowly until medium done; stirring occasionally. For poultry broth, cover bony pieces with cold water, simmer until meat is tender. Drain; skim off fat.

2. Place salt in containers (if desired) and pack meat hot, leaving 1 inch head space in jars, $\frac{1}{2}$ inch in tin cans. Cover meat with hot broth or hot water (leaving 1 inch head space in jars but filling tin cans to top); work out air bubbles.

3. Adjust tops of jars or seal tin cans and process at once. (Time table on p. 64.)

Note: Poultry may be hot-packed without bone. The bones may be removed from meaty pieces before or after the precooking.

Raw Pack Method

1. Prepare meat in jar-size pieces, add salt to empty, clean containers (if desired) and pack with raw, lean meat; leave 1 inch head space in jars; fill cans to top.

2. Set open jars or cans in large vessel with water boiling about 2 inches below rim of jar or can. Cover vessel and heat at slow boil until meat in all jars or cans is steaming hot and medium done (about 50 minutes in tin cans, about 75 minutes in glass jars). If a thermometer is available, meat is heated enough when center of jar or can registers 170° F. If tin cans are used, press meat down $\frac{1}{2}$ inch below rims. Add boiling water, if needed, to fill both glass jars and tin cans to top.

3. Adjust lids of jars or seal tin cans and process at once (time table on p. 64).

Note: Poultry may be raw packed, without bone. Follow directions above but process at the longer time given in time table on p. 64).

Sealing Containers

Follow directions of the manufacturer for closing of jar tops. In general, the following rules are given:—

1. One-piece tops made of zinc or other metal should be turned down tightly and back about one-fourth inch. After processing, screw top down tight at once.

2. The ring of two-piece metal vacuum seal lids should be turned down tightly. The ring may be removed after 24 hours.

3. The ring of three-piece glass top jars should be turned down gradually until it is tight and then back one-fourth turn. After processing, turn ring down tight gradually. Remove after 18 hours.

4. Glass-top jars held in place by a wire bail are partially sealed by placing the long bail over the top and leaving the short bail up against the jar. After processing, push short bail down at once.

5. Plain tin cans should be used for meat and should be carefully sealed; test sealing machine before each use by filling a can partly full of water, and sealing it. Cover can with boiling water, let stand a few minutes; if air bubbles rise from the can, seam is not tight and sealer should be adjusted.

Processing

Follow manufacturers' directions on use of pressure canners. Heat should be so uniform that the pressure does not fluctuate. Weighted gages need only to be clean; dial gages should be checked at least once

a year (before canning season). The pet cock should not be opened until the pressure has dropped to zero.

Then, for glass jars or No. 3 cans wait a minute or two and slowly open pet cock; for No. 2 or No. 2½ cans, open pet cock without waiting for pressure to fall.

Cooling and Storage

Glass jars should be set far apart, right side up to cool for 24 hours. Plunge tin cans at once into clean, cold water and leave until luke warm. Store tin or glass in a cool, dry place.

Special Directions

CORNER BEEF—Remove from brine. Soak 2 to 3 hours in clear water. Simmer 30 minutes. Pack hot and process.

GROUND MEAT AND SAUSAGE—Season ground meat; mold into cakes. If using tin cans, shape meat by packing into a can which has had both ends removed; slip meat out of can and slice with sharp knife.

THE HOME MEAT SUPPLY

*Time Table

10 Pounds Pressure (240°F.)

PRODUCT	PINT Glass Jar (minutes)	QUART Glass Jar (minutes)	#2 Plain Tin Can (minutes)	#2½ or #3 Plain Tin Can (minutes)
1. Beef, veal, pork, lamb				
Hot pack.....	75	90	65	90
Raw pack.....	75	90	65	90
2. Ground Hamburger				
Hot pack.....	75	80	65	90
Raw pack.....	—	—	100	135
3. Heart (like No. 1) Tongue (hot pack)				
4. Corned Beef.....	75	90	65	90
5. Poultry and Rabbit				
Hot pack (with bone).....	65	75	55	75
Hot pack (no bone).....	75	90	65	90
Raw pack (with bone).....	65	75	55	75
Raw pack (no bone).....	75	90	65	90
6. Giblets.....	75	—	65	—
7. Sausage (like No. 2) raw pack	—	—	100	135
8. Soup Stock.....	20	25	20	25

*Table adapted from U.S.D.A. "Home Canning of Meat"—1945.

Cakes may be quickly browned (both sides) in hot fat or may be done "raw pack".

HEART—Simmer in 1 quart water to which whole mixed spices have been added. Proceed as for hot pack.

SOUP STOCK—Saw or split large bones into smaller pieces; put into a large kettle with meat scraps. Cover with water; let stand 2 to 3 hours. Add seasonings as desired and simmer, reducing the volume until stock is quite concentrated. Strain, cool and skim off fat. Process.

TONGUE—Cook until almost tender, seasoning if desired. Remove skin, pack or cut into slices using hot pack.

USING CANNED MEAT

Variation in the ways of serving canned meat will make the menus much more interesting. Here are a few suggestions.

Serve with Different Sauces

Use the juice drained from the meat and add to it tomato juice, catsup or chili sauce, onions browned in butter, minced parsley, or finely chopped celery. Peppercorns, bay leaf, paprika, or tobasco sauce may also be used. Cook the sauce until the flavors are blended. Thicken if necessary and pour over the heated meat. The meat may be served with a cream sauce and the meat juices used to flavor other dishes. Toast or hot biscuits will be popular with creamed meats.

Combine with Other Foods

Serve the stew with dumplings, noodles, rice, or spaghetti, or line a buttered mold with cooked rice or cornmeal mush, pour in the meat moistened with brown sauce or tomato sauce and steam for 30 to 45 minutes.

Shepherd's pie is made by placing a layer of mashed potatoes over the meat in a casserole and baking in a moderate oven until the potatoes are slightly browned.

A company dish may be made by this recipe. To two cups hot mashed potatoes add one egg. Mix well and shape into shallow baskets with a spoon or a pastry tube. Brown on a buttered baking sheet and fill with diced meat combined with any of the sauces suggested.

A one-dish meal is made by placing alternate layers of meat and vegetables in a baking dish and covering with meat sauce, tomato sauce,

or thin cream sauce. Buttered crumbs or a biscuit crust may be placed on top. Bake for 30 minutes.

Cook whole heads of cabbage, large onions, or halved egg plant in boiling salted water until they are partially tender. Remove the center and fill with seasoned meat. Cover with crumbs and bake until the vegetable is tender, adding water if necessary.

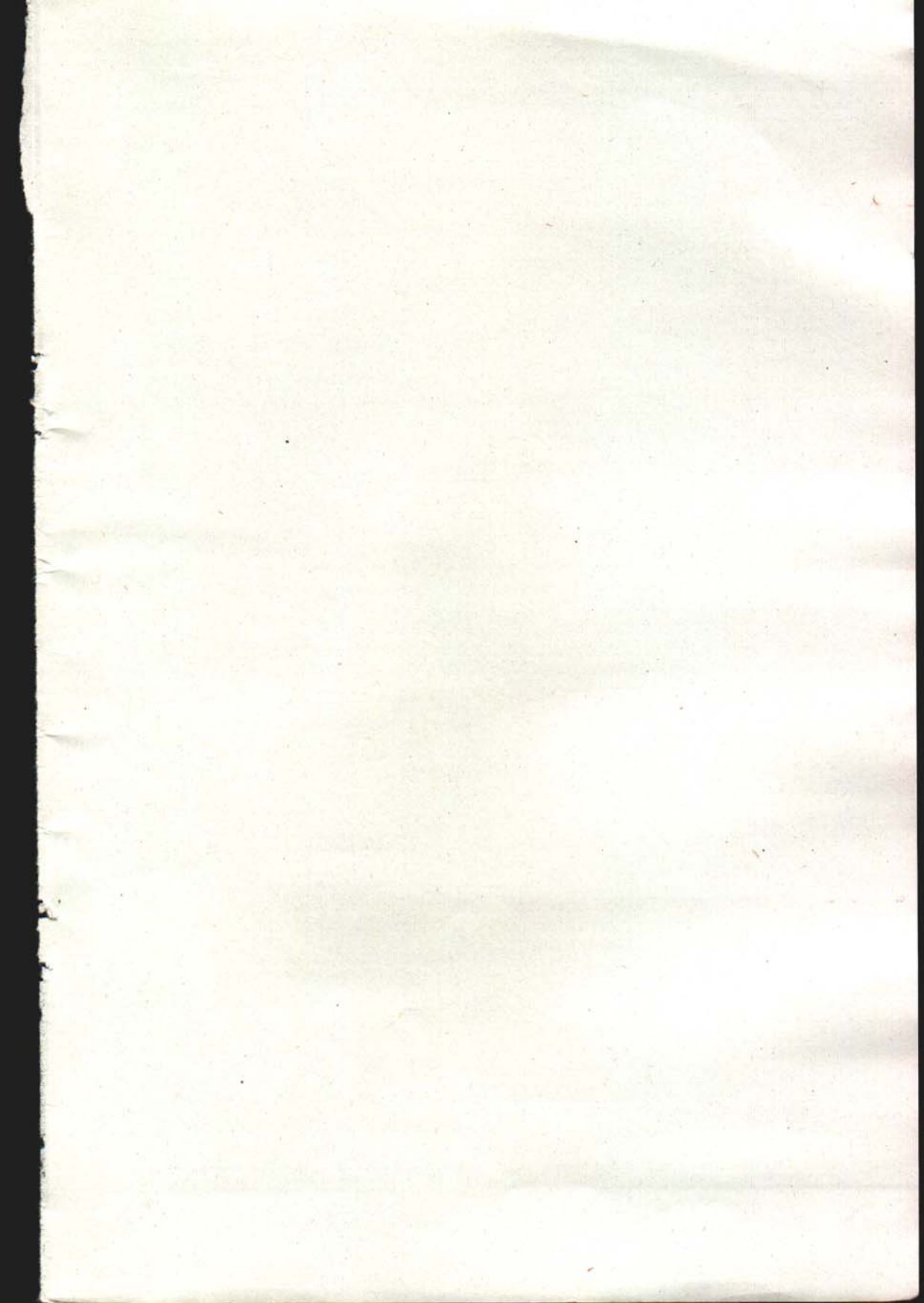
Use in Salads

Combine with hard-cooked eggs, pickles, celery, onion juice, or cooked diced vegetables. Serve with mayonnaise or cooked salad dressing. A better flavor is obtained by allowing the meat to stand in a mixture of three parts of oil, and one part of vinegar for a few hours before mixing with the other ingredients.

Use in Croquettes

Grind the meat, season with salt, pepper, and onion or onion juice. Add enough very thick white sauce or egg to bind the mixture. Bread crumbs may be added to "stretch" the meat if desired. Shape into balls, dip in egg and crumbs, and fry in hot deep fat or brush with melted butter and bake in the oven. Serve with a sauce.

Meat which is firm after canning, tongue especially, may be dipped in egg and crumbs and browned in hot fat. Serve with horseradish sauce made by combining grated horseradish with whipped cream and colored with a generous amount of paprika.



Michigan State College and U. S. Dept. of Agriculture cooperating, R. J. BALDWIN, Director Extension Service, Michigan State College. Printed and distributed under acts of Congress, May 8 and June 30, 1914.

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