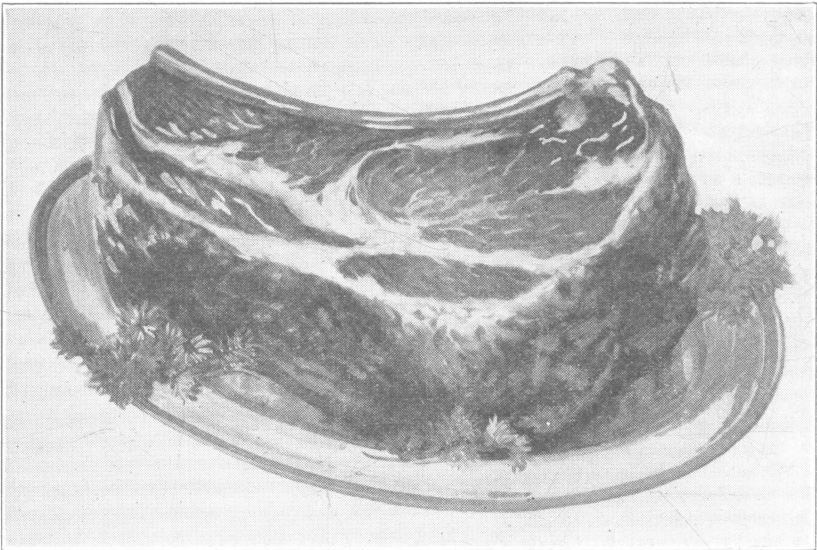


MEATS

Buying • Preserving • Cooking • Carving



By

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MEATS: Buying, Preserving, Cooking, Carving



The Consumer as a Buyer of Meats

DURING the past few years there has been a sharpening of interest in all buying problems. Consumers are beginning to want to know how they may get the most for their money. They are seeking definite information on how to buy specific foods, and information on the standardization or grading of goods which will make intelligent and profitable buying possible.

The homemaker's use of purchasing power is a definite responsibility because, whether wisely or poorly used, it affects the individual and her family. All will agree, no doubt, that a woman's use of purchasing power should benefit her family.

From one-third to one-half of the money expended by the family usually goes for food, and the homemaker is the one who expends not only the food money but probably 85 per cent or more of the family income. The intelligence and training of the household buyer are, therefore, the most hopeful paths to better choices and controlled costs.

Specifically how much must be spent for food will depend upon such variable factors as size of family, the dietary needs of various members of the family, the cost of food, and the size of family income. The lower the income, the higher the percentage that must be expended for food, and the greater the necessity for wise expenditure in order to insure adequate nutrition for the family and to conserve funds.

Statistical studies have shown that American families tend to spend a very large percentage of food money on meats. If as much as 35 to 40 per cent of food money goes for meats, the chances are that other necessary items of the diet, such as milk, fruits, and vegetables, are being neglected, especially on the lower income levels.

Meats as commonly purchased are among the most expensive items of the diet; they are well liked; and many families place undue emphasis on the need for meat at every meal. All such facts probably explain, in part, the tendency to spend more on meats than is necessary in a well balanced dietary. Another important consideration is the lack of information on the part of most homemakers as to what determines price and quality of meats. It is the exceptional homemaker who knows very much about what cuts of meat to ask for; what cuts are suitable for certain uses; and the relative costs, nutritive value, and palatability of various cuts. She finds it necessary to depend on the butcher's judgment and reliability when she asks vaguely for a steak, a roast, or a stew. She usually specifies that she wishes a "good" piece of meat, but only the eating will tell whether she obtained what she desired.

A survey made a few years ago by the United States Department of Agriculture on the meat shopping habits of consumers disclosed the fact that

the majority of purchasers know the names of only two kinds of steaks and fewer than three cuts for roasts. Fifty per cent of the women questioned in the survey stated that their meat dealers carry only the "best quality" of meats. Meat experts know that less than 9 per cent of the meat produced falls into the best grades.

Judged on the basis of expert grading, the bulk of the meat carried in the majority of markets is no better than "medium." Some markets carry chiefly meats which under the federal grading system would fall into the "choice" and "good" classifications, while other markets carry only meats which would fall into the "plain" classification. But if the consumer-buyer knows too little about the meats which she buys for her family, the fault is not entirely hers. In general, she has had little opportunity to learn about grades and to know what characteristics to look for in meats of various qualities.

FEDERAL INSPECTION OF MEAT

All meats going into interstate commerce are government inspected by trained experts. Animals are inspected alive and at various stages of the slaughtering process. If meat is sound and wholesome, the inspector's purple stamp is placed in numerous conspicuous places on the carcass. This stamp carries numbers which indicate the packer and identify the carcass. In actual use, the zeros shown in Fig. 1 are replaced by numbers.

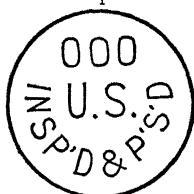


Fig. 1.—U. S. government inspection stamp.

If the meat is unsound, it is not permitted to enter retail trade. The meat buying public is well protected against diseased animals if meats are government inspected.

The United States Government has authority over only those establishments whose products enter wholly or partly into interstate or foreign trade.

Establishments limiting their trade to the state in which the animals are killed are under state supervision, but some such establishments ask for and receive federal inspection.

ARE FARM-BUTCHERED MEATS INSPECTED?

Farmers are permitted to butcher meats during a certain season of the year. The State Department of Agriculture specifies the time and conditions of slaughter. Meat to be sold must at all times be subject to inspection by inspectors of the State Department of Agriculture, the District Health Commissioner, or his inspectors.

Farm meats may be sold in cities only if such meats comply with municipal regulations. Farm meats may, however, be sold to meat markets or to individuals of villages which have no meat ordinances preventing or regulating such sale. Some, but relatively few, of the city ordinances are based on United States government requirements, but can be satisfactory and protect the consumer if rigidly enforced.

Classification and Grading of Meats

B E E F

Beef carcasses are classified on the basis of age and sex. The specific classes are steer, heifer, cow, stag and bull.

Steer is a male castrated when young.

Heifer is a young female which has not yet borne a calf.

Cow is a female which has borne a calf.

Stag is a male castrated after maturity.

Bull is a mature male, not castrated.

Steer carcasses are preferred by the retailer because of their heavier weight and the higher proportion of meat to bone, but steer and heifer carcasses of the same grade are of equal value to the consumer so far as quality of meat is concerned.

The better female carcasses below the heifer class are now marketed by packing plants as heiferettes.

The meat from cows is variable, depending upon maturity but is very inferior to both steer and heifer. Stag varies in quality, depending upon the age at which the animal was castrated. Very little stag meat is to be found on the market.

Meat from bull carcasses is so inferior that little of it goes into retail trade. A few of the best bull carcasses may be marketed as a cheap grade of beef. Fig. 3 shows the wholesale division of a carcass.

GRADES AND GRADE-MARKING OF BEEF

Some packing houses employ government graders who grade and stamp beef according to the federal system of grading. Other packing plants, particularly the large ones, prefer to have graders of their own who use a system of grading recommended by the Institute of American Meat Packers. This system has ten grades instead of the seven of the federal system.

Some packers, instead of using either of the systems mentioned above, prefer to identify quality by brand name.

The points which are used as a basis for grading, regardless of system used are:

1. Conformation or form
2. Finish
3. Quality

Conformation means the build or shape of the animal. Good beef cattle are short, thick, and compact. Cuts from such animals have a high percentage of meat in relation to bone. Poor conformation is long, thin, and angular. Cuts from carcasses of poor conformation are less meaty and the percentage of bone is higher.

Finish means the amount and distribution of the fat. A well-finished beef carcass has an even layer of fat on the exterior of the carcass. Fat is also intermingled with the lean in visible markings known as "marbling." Internal fat surrounds the kidneys and a thin layer of fat covers the interior of the ribs.

Good quality of beef is shown in several ways:

The lean has a bright red color after the cut surface is exposed to air for a few minutes. It is fine grained and smooth to the touch. The fat is creamy white, firm, and brittle. The chine or backbone is soft, red, spongy, and shows considerable cartilage. The lean of a poor carcass is darker red in color, is coarse-grained and lacks the smooth, "satiny" surfaces when cut. The fat of a poor quality of carcass is not only scant in quantity and unevenly distributed, but has a yellow or orange color and is oily or soft in texture. The bones of a poor quality of carcass are white, hard, and brittle and show little or no cartilage.

On the basis of the various points mentioned, grades are formulated.

GOVERNMENT GRADES AND GRADE STAMPING

Federal grades are prime, choice, good, medium, plain, cutter or stripper, and low cutter. The last two are not good enough to go directly into retail trade, but certain better sections are removed from the cutter grade of carcass and are sold as boneless cuts. The remainder of the carcass, together with the meat from low-cutter carcasses, goes into miscellaneous meat products or is canned.

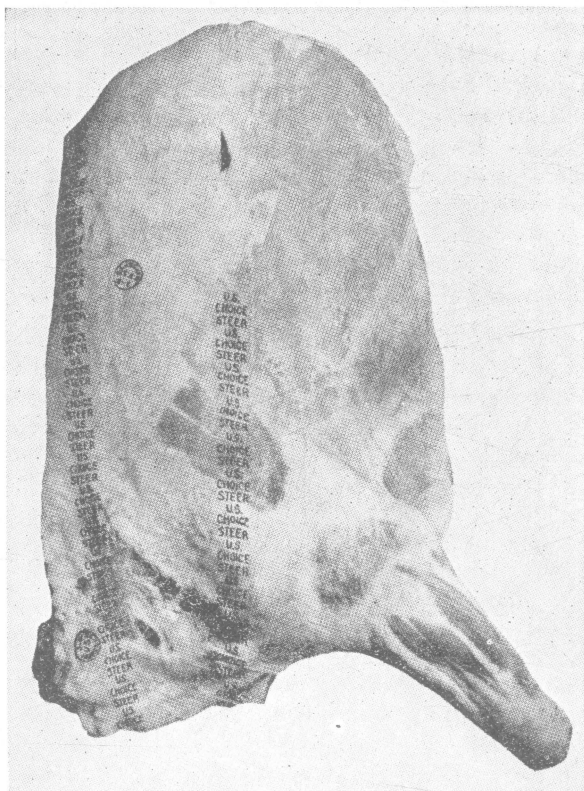


Fig. 2.—Forequarter of beef. The government stamp uses the letters U.S. with a designation of quality and sex of the animal. This stamp extends the whole length of the back, and may be on other portions of carcass. Note federal inspection stamp on carcass.

The highest grade of beef is prime. It is practically perfect in form, finish and quality, and since less than 1 per cent of all beef produced rates "prime," the ordinary consumer probably never sees this grade. It is "exhibit" meat, is high priced, and probably is eventually used by high class hotels and restaurants. It is chiefly steer meat.

Choice grade as applied to steer and heifer meat is excellent. It possesses minor imperfections

which prevent its being ranked as prime. Choice cow is the best of the cow carcasses, but is far below choice steer and heifer in quality. Since the better carcasses of this class are now marketed as heiferettes (choice, good, and medium) the best cow meat to be found in retail markets is good. Most of the cow carcasses sold in retail markets are of medium and plain grades.

While good is the third grade of beef, it is very good if it is from steer or heifer carcasses. The bulk of the meat to be found in retail markets is medium grade, and plain is the lowest grade which the butcher cuts into consumer cuts. Tenderloins and other relatively tender cuts are stripped from cutter carcasses and sold as boneless cuts.

It is very easy for the consumer to know what quality of meat is being purchased if the meat has been government graded. The carcass is stamped as shown in Fig. 2. Most of the guesswork about quality is eliminated. The consumer should learn to distinguish *grade stamp* from the *inspector's stamp* so that she could not be misled.

Probably the chief reason that so little government graded meat is to be found in retail markets is that the consumer has not become fully aware of the value of the service. A greater demand on the part of consumers for such grading is the way to insure its wider adoption by packing plants and more frequent purchase of government graded meat by the retailer. At present, it is possible in some eastern and far western markets to obtain not only government graded beef but also lamb and pork. The middle west has little government graded meat except beef. Veal is difficult to grade because of its rapid deterioration. It may grade choice at the packing plant, but be below that by the time the consumer gets it. Also, the absence of fat on the outside of the carcass makes stamping difficult. Meat experts point out the importance of government grading of sausage to prevent the use of all grades of meat in ground products.

PACKER GRADING AND STAMPING

The system of grading recommended by the Institute of American Meat Packers makes use of numbers to indicate sex and other numbers to indicate grade. Instead of being stamped on the carcass, the information is stamped on a tag which is pinned to the carcass. This system is not helpful to the consumer-buyer because the code is not understood by the average purchaser of meat. Even if it were, the labels which give the information are probably removed by the retailer along with other labels which may be on the carcass. The dealer knows the grade of his meat but the customer does not. The customer may ask, however, and obtain the desired information.

Packer grades are prime, choice, good, good medium, medium, fair, plain, common, cutter, and canner. The numbers which are stamped on tags and which correspond to the grades described by the above words are shown below:

0 - Prime	5 - Fair
1 - Choice	6 - Plain
2 - Good	7 - Common
3 - Good Medium	8 - Cutter
4 - Medium	9 - Canner

BEEF

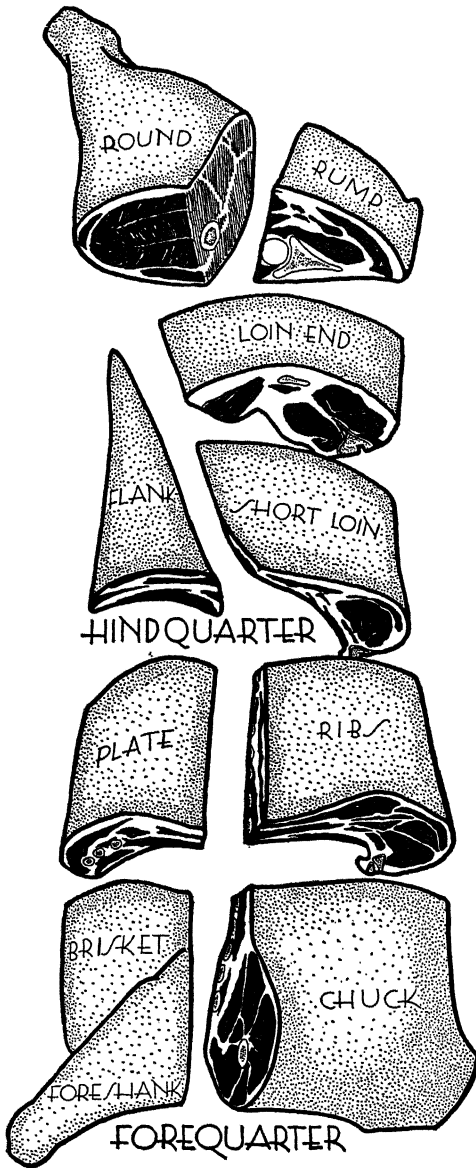


Fig. 3.—Showing division of the beef carcass into wholesale cuts.

VEAL

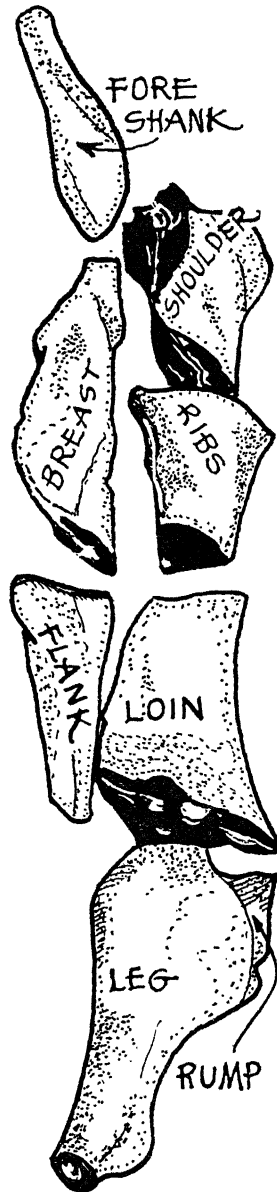


Fig. 4.—Showing division of the carcass into wholesale cuts.

As previously stated, some packers prefer to use brand names to identify quality. The consumer can learn to associate certain characteristics with brand names when the brands used by various packers are known. Only steer and heifer carcasses and grades designated prime, choice, good, and medium are branded.

The brand names used by the four largest packing companies are cited as examples of this system of grading and are shown in the following table:

Brand Names and Corresponding Grades As Used by Packing Companies

Swift & Co.	Armour & Co.	Cudahy Packing Co.	Wilson & Co.	Approximate grade corresponding to brand (Packers' system)
Premium	Star	Puritan	Certified	0 (Prime) 1 (Choice)
Select	Quality	Fancy	Special	2 (Good) 3 (Good medium—better carcasses)
Swift	Banquet	Cudahy	Wilson	3 (Good medium—poorer carcasses) 4 (Medium)



V E A L

Veal is meat from immature animals of the bovine species. In this country the minimum age for killing is three weeks and the maximum about three months. The best carcasses are usually from animals four to eight weeks of age and may be of either sex.

GRADING OF VEAL

Grading of veal, as for other animals, is done on the basis of conformation, finish, and quality. Good form is short, thick, and compact. Calves from the beef type of cattle have more desirable form and yield more meaty cuts than those from the dairy type of cattle.

Good finish of veal means something different from good finish of beef. There is little or no exterior fat on veal and no marbling. The fat is chiefly around the glandular organs and in the pelvic and flank regions.

Good quality of veal is shown by grayish pink color of flesh and a texture which is fine grained and smooth to the touch. The interior fat of good quality veal is firm and brittle and is grayish or pinkish white in color. The bones are red, spongy, and soft, and have an abundance of cartilage.

The grades of veal are choice, good, medium, light or common, and heavy. Heavy carcasses grade lowest because they are from animals too mature to furnish good veal. The flesh is darker in color than that of the better grades of veal.

LAMB AND MUTTON

Sheep carcasses are classified as lamb and mutton, according to the age of the animal.

Lamb is from young animals up to about one year of age, although the exact age at which lamb changes to mutton is somewhat indefinite. The animal may be of either sex.

“THE “BREAK JOINT”

The usual test for a lamb carcass is the “break joint” (see Fig. 5). The fore feet when broken off sharply will separate from the leg above the regular joint. The break shows four distinct ridges which appear smooth, moist, and red with blood.

If, in yearling, the leg breaks at the break joint, the ridges appear white, hard, dry, and rough. In mutton the break comes in the true joint which is below the break joint.



Fig. 5.—The “break joint” in young lambs will break in four well defined ridges, as shown in illustration, right side. This joint is the most reliable indication of the age of carcass.

GRADING OF LAMB

Grading of lamb is on the basis of form, finish, and quality. Grades are prime, choice, good, medium, common, and cull. Good form is short, thick, and compact. Good finish resembles that of beef. There is a thin layer (about $\frac{1}{8}$ to $\frac{1}{4}$ inch) of fat on the outside of the carcass. There may be marbling, and internal fat is deposited as in beef.

Good quality is shown by the pinkish-red color of flesh, fine grain of flesh, and smooth cut surfaces. The fat of good lamb is firm, flaky, and brittle, and may be white or pinkish in color. The bones are soft, red, and spongy, and show cartilage.

Meat from older lamb or yearling is more nearly the color of beef than meat from other animals.

LAMB

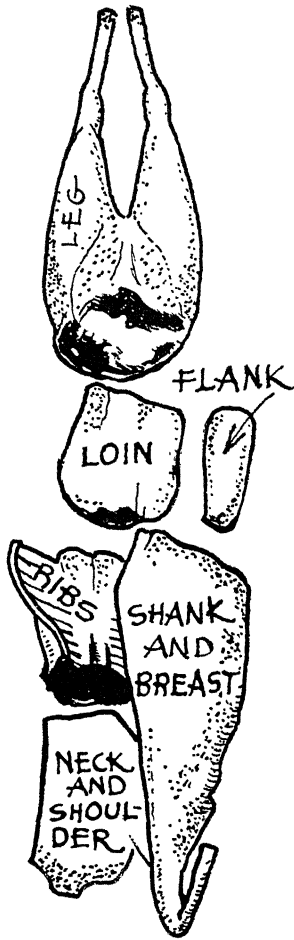


Fig. 6.—Showing division of the carcass of lamb into wholesale cuts.

PORK

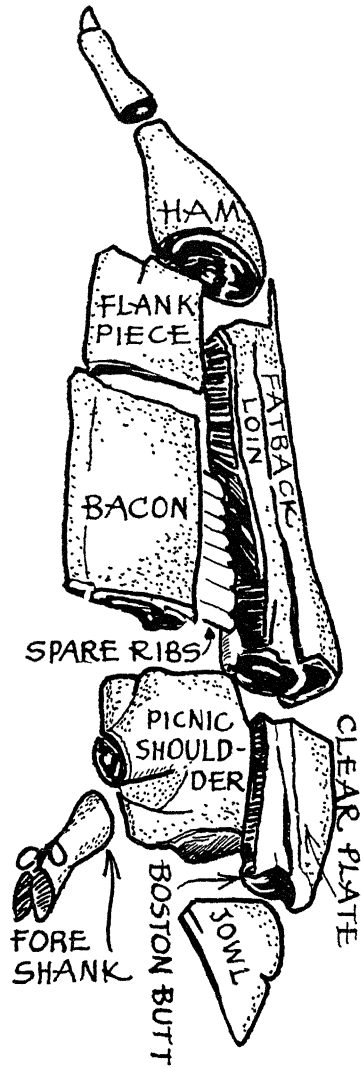


Fig. 7.—Showing division into wholesale cuts.

“Hot house” lambs are produced under artificial conditions for fancy trade. They weigh 15 to 20 pounds, are from 5 to 8 weeks of age, and are so produced that they come on the market preceding spring lamb. The aim of the producer is to command a high price. The meat of “hot house” lamb is very tender and delicate in flavor, but is flabby, watery, and inferior to more mature lamb.

The consumer who purchases lamb during March, April, or May may be told by the dealer that the carcass is a "genuine spring" lamb. The term "genuine spring" lamb is used to differentiate fresh lamb so produced that it is ready for market in the spring from lamb which matured the previous fall but was not slaughtered until the spring. The latter is older than genuine spring lamb, but is not yet in the yearling class. It is called spring lamb. Genuine spring lamb commands a somewhat higher price than spring lamb. It is more tender and has a more delicate flavor than spring lamb.

MUTTON

Mutton carcasses are those which have passed the lamb stage. Most of the meat from sheep is marketed as lamb or yearling. Yearling carcasses are heavier than lamb, and the flesh is darker in color. The meat is usually tender but lacking in juiciness. Yearling is the best of the mutton class.

Relatively little older mutton is sold but it may be well for the consumer to understand that among older mutton carcasses "wethers" rank higher than "ewes" or "bucks." Wether carcasses are from males that were castrated as young lambs. The flesh of all carcasses in the mutton class is darker in color than lamb. It is also less tender and has stronger flavor if beyond the yearling age.

The characteristic flavor of lamb and mutton is due to an oil in the skin glands. It is more pronounced in older carcasses. Taking off the skin or fell removes much of the objectionable flavor.



PORK

Pork is the meat of swine. Good quality pork is from young animals usually seven to twelve months of age. In young animals there is no distinction in quality or grade due to sex. In older animals sex differences are pronounced.

GRADES OF PORK

Pork carcasses are graded number 1, 2, and 3 according to conformation, finish, and quality. Short, thick, compact form is best for pork as for other meats. The finish of pork varies according to the type of carcass, but there is always a thick external layer, abundant leaf fat (fat layer lining the abdominal cavity) and some marbling.

The flesh of good quality pork is grayish pink in color, and is fine-grained. The fat of pork should be very firm and white but it is not brittle as in other types of meats. Bones are soft, red, and spongy.

The characteristic flavor of pork is due largely to the fat embedded in the flesh.

Meat Cuts—Characteristics and Relative Costs

B E E F

Most cuts have identifying characteristics such as shapes of bones by which they may be known if the purchaser once becomes familiar with them. If cuts are boned they are more difficult to identify.

There is a tendency in the merchandising of meats to bone some of the less desirable sections of the carcass in order to render the cuts more desirable. The chuck, for example, contains rather large amounts of bone in the form of backbone, ribs, and shoulder blade bone. It is also high in connective tissue. It becomes a solid meaty roll if boned and tied, and the consumer may buy any amount of meat from the roll. He pays for the bones which were originally in the meat, of course, and is entitled to the bones if he wishes to use them for meat stock or other purposes.

The most tender cuts of beef are the rib and loin cuts, which are at or near the center of the back. Rib cuts contain the rib bones (see Fig. 8, rib roast). In separating the fore from the hind quarter, one rib is left on the hind quarter to protect it from loss of shape. The first steak cut from the loin, therefore, has a rib bone. Other cuts from the loin have bones of various shapes, depending on their location in the loin.

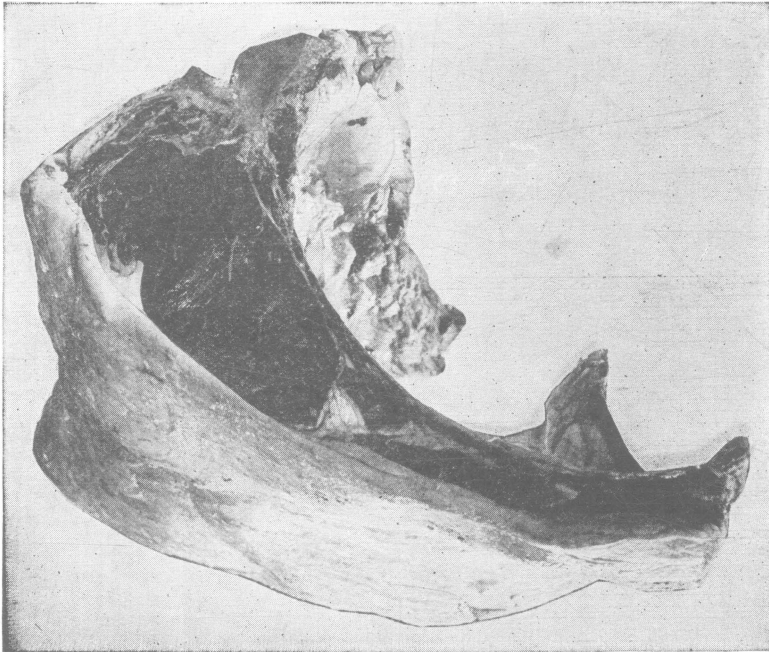


Fig. 8.—A choice rib roast.

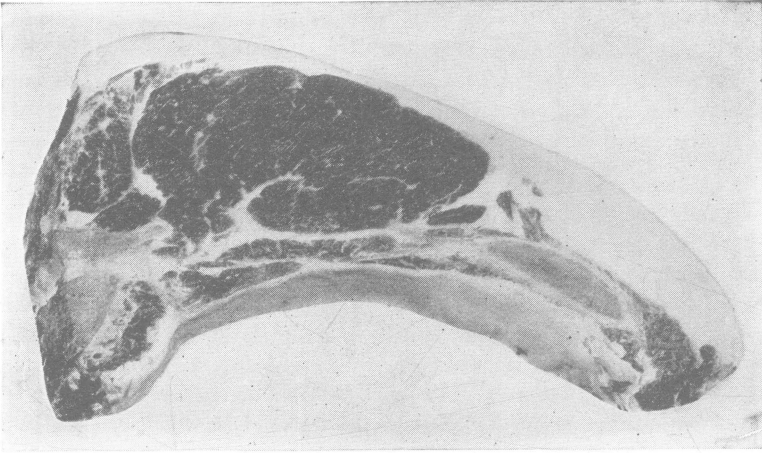


Fig. 9.—Club steak. This steak contains the thirteenth rib.

Club steaks which are cut from the end of the loin nearest the center of the back have a very small amount of tenderloin (see Fig. 9). T-bone steaks, which are next to the club steaks, have a T-shaped bone and have more tenderloin than club steaks (see Fig. 10). Porterhouse steaks have still more tenderloin muscle, and may have bones of various shapes, depending on their location (see Fig. 11).

Most of the sirloin steaks (which are cut from the hip end of the loin) have a lower percentage of bone than the porterhouse and the T-bone steaks, but the muscle farthest from the backbone is cut diagonally or with the fibers, which

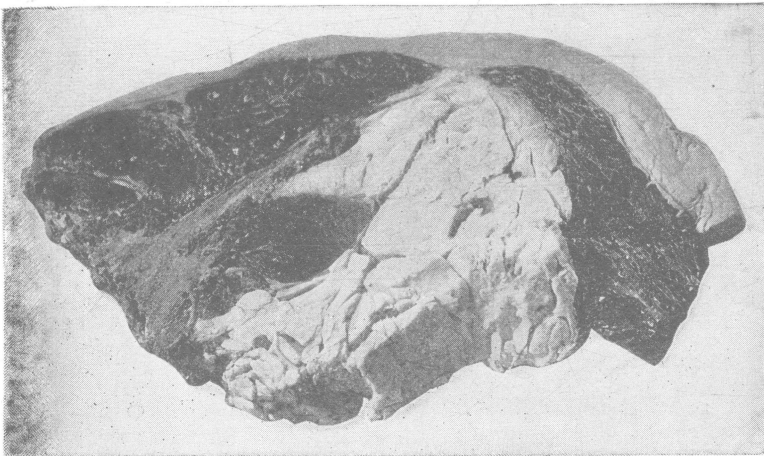


Fig. 10.—T-bone steak. The tenderloin, the muscle below the bone, is fairly large in this cut.

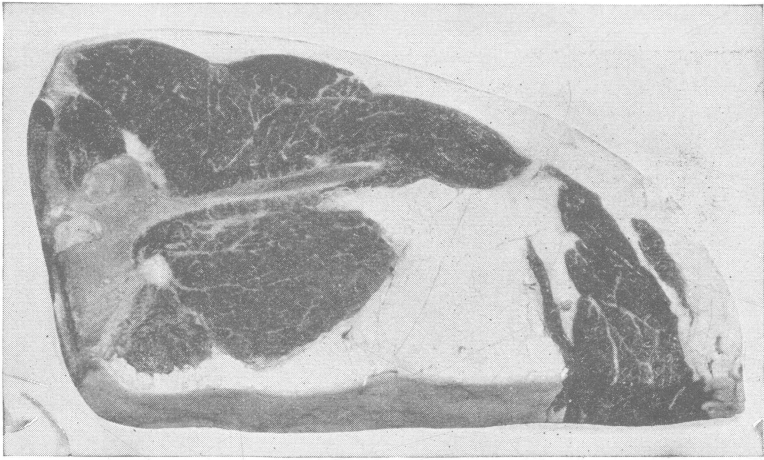


Fig. 11.—Porterhouse steak. In this steak the tenderloin is at its widest.

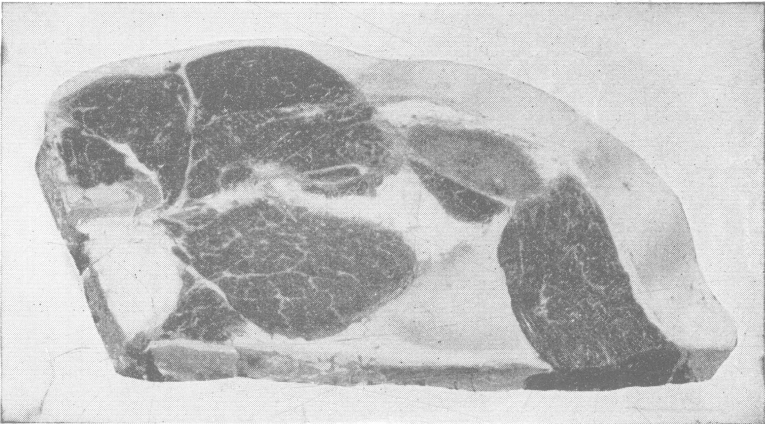


Fig. 12.—Pin-bone sirloin steak. Note tip end of pin-bone at upper right, center.

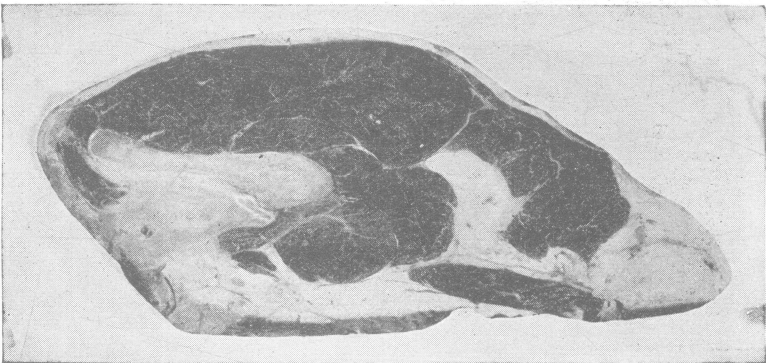


Fig. 13.—Double bone sirloin steak.

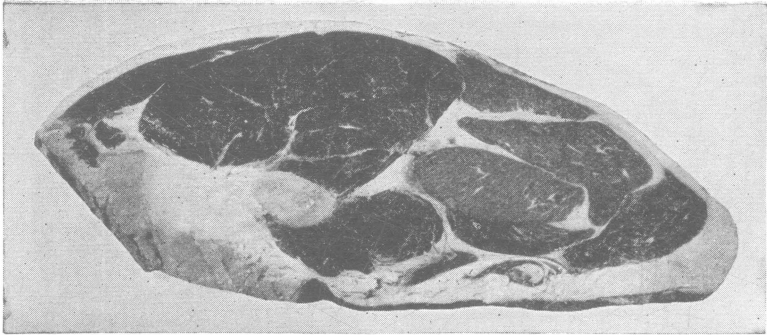


Fig. 14.—Round bone sirloin steak.

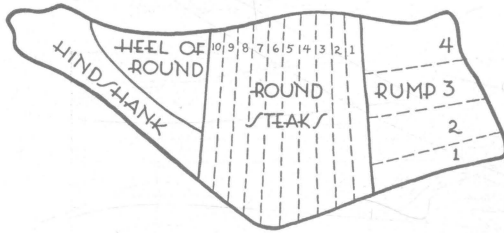


Fig. 15.—Common method of dividing round-with-rump (Fig. 18) into the rump, round steaks, heel of round, and hindshank.

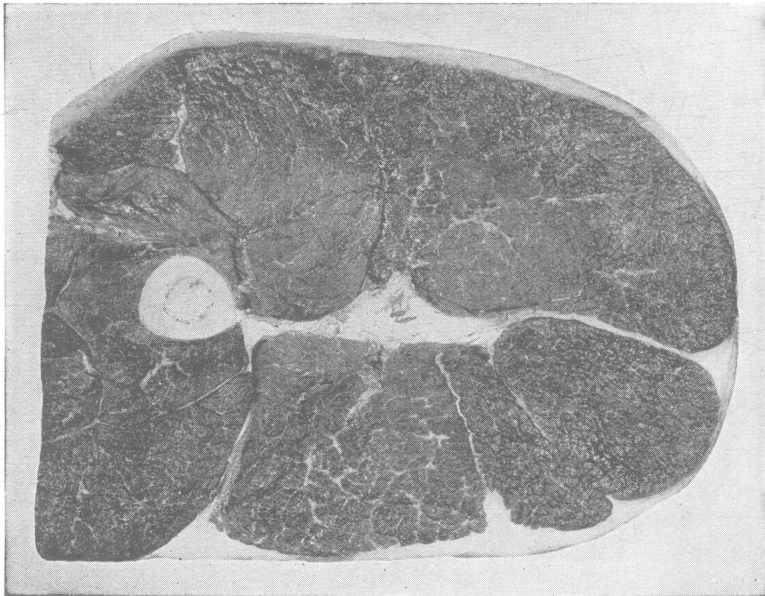


Fig. 16.—Round steak. This is the first cut after the rump is cut off (see Fig. 15).

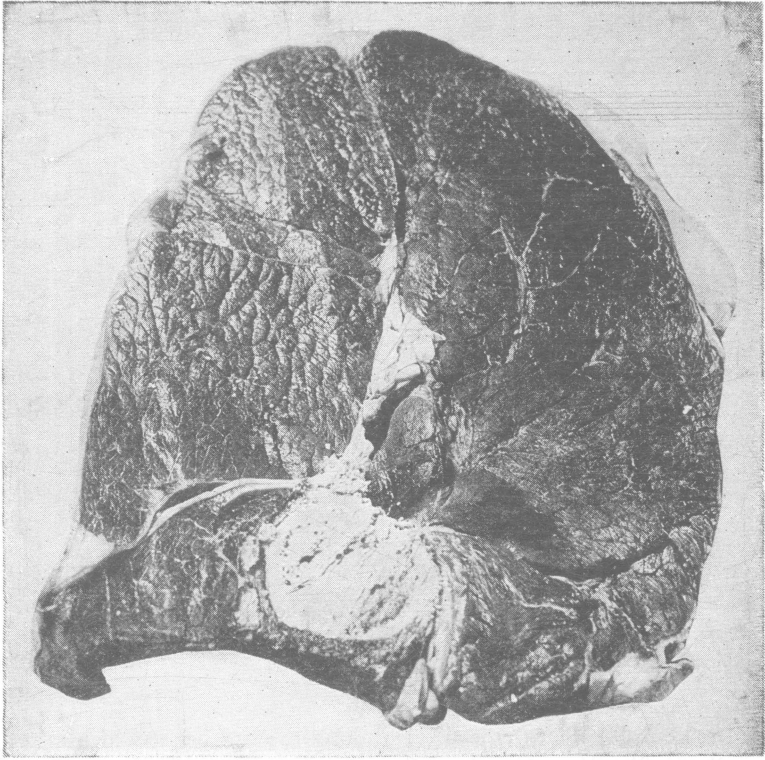


Fig. 17.—The rump.

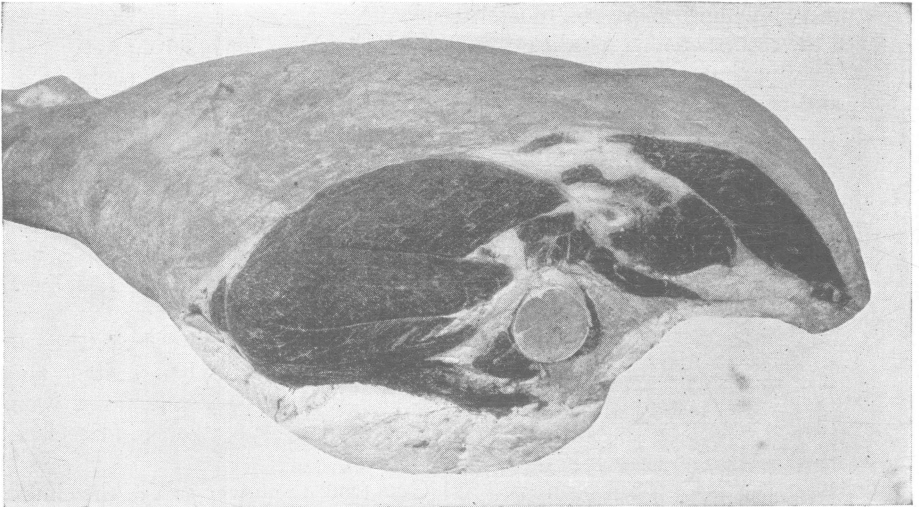


Fig. 18.—Round-with-rump. A common method of dividing this into retail cuts is shown in Fig. 15.
(Part of shank has been removed)

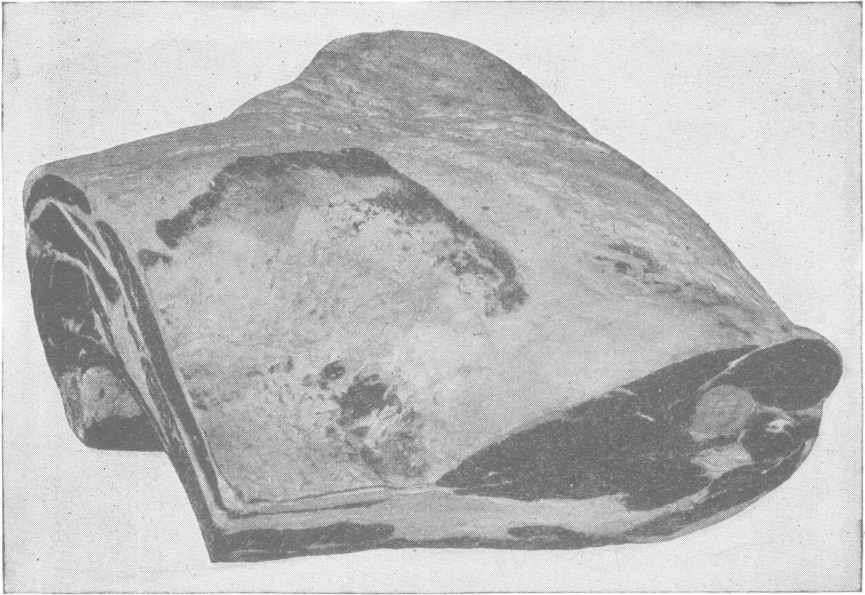


Fig. 19.—The chuck. The face at left contains rib bone and shoulder blade. The face at lower right was separated from foreshank.

makes it less desirable than the part lying along the backbone, which is cut across the fibers (see Figs. 12, 13, and 14).

Most cuts along the back have a high percentage of bone, which is a large factor in cost. They also cost more per pound because they are tender and the consumer is willing to pay for tenderness. When bone and excess fat are removed the cost per pound of edible meat runs higher than for other cuts.

The medium tender cuts of beef are the round (Fig. 16), the rump (Fig. 17), and the chuck (Fig. 19). The round is an economical cut because it has

no refuse except the small leg bone. The rump has the pelvic bone, but nevertheless has a fairly high percentage of lean meat. The fibers run in several directions and are somewhat coarse, but the cut is relatively tender. That part of the chuck which lies along the backbone has a very high percentage of refuse. The muscle lying along the backbone is about as tender as it is in the rib section, but other muscles lack tenderness.

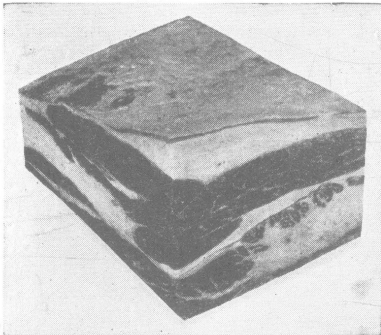


Fig. 20.—English or Boston cut. This is the lower left corner shown in Fig. 19.

Cuts from the lower part of the chuck are the English or Boston cut (see Fig. 20), and the shoulder arm cuts (see

Fig. 21). The latter are similar to the round in general shape but are coarser, less tender, and smaller in diameter. They should cost less per pound than round. Since the leg bone is the chief waste, the cut has a high proportion of lean. The English or Boston cut is approximately square in shape and has the ends of the ribs in it. This cut is less tender and also lower in price per pound than the section of the chuck which lies along the backbone.

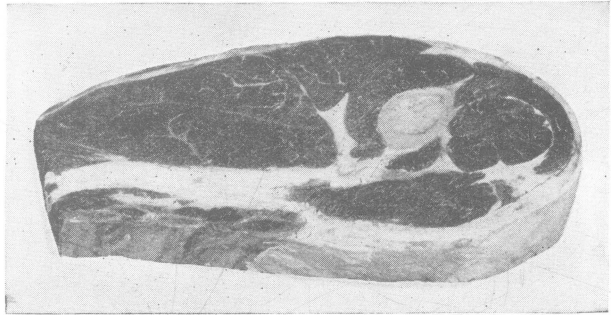


Fig. 21.—Shoulder arm pot roast from lower right face, Fig. 19. Note the small round muscle to the right of the bone.

The heel of the round is a solid piece of lean cut from the hind leg below the round. It has coarse fibers and is one of the least tender cuts, but it has no waste and costs less per pound than some other meaty cuts. The meat from the neck is similar in quality and cost to the meat from the shanks. Other cuts which are among the least tender and lowest in price are the short ribs (Fig. 25), navel (Fig. 25), and brisket (Fig. 26). They do not have a high percentage of lean meat.

The flank steak is the one good portion from the flank (see Fig. 24). It has fibers running lengthwise of the steak, but is free from refuse. It is superior to navel but is classed among the least tender cuts.

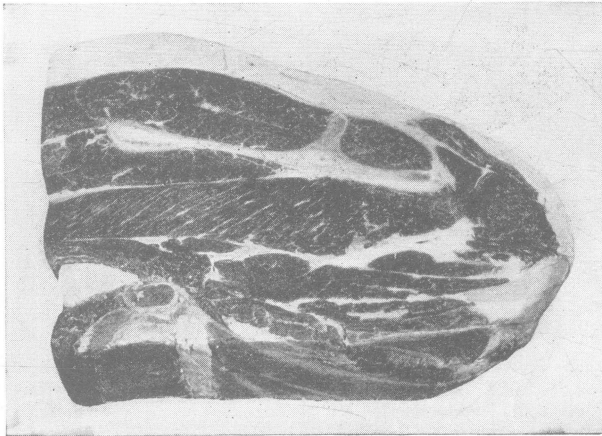


Fig. 22.—Third chuck rib. This is another cut from the chuck. It lies along the backbone and is the most tender part of the chuck. Note shoulder blade near top.

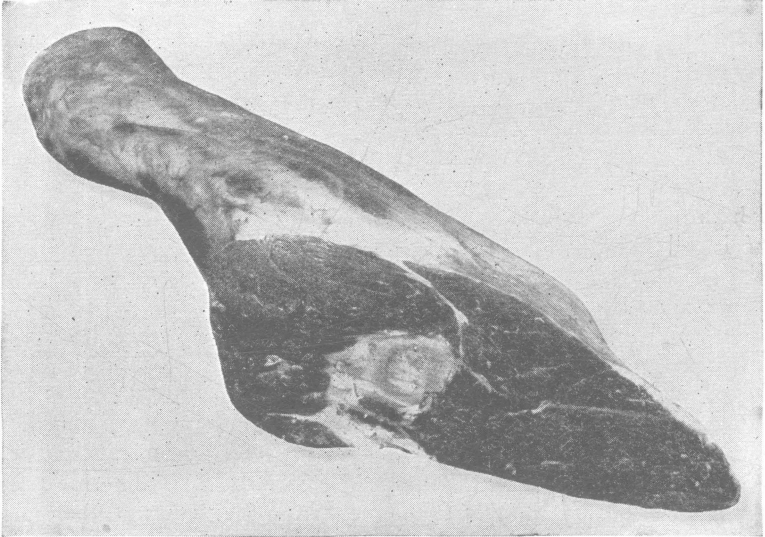


Fig. 23.—The foreshank has a rather large proportion of meat to bone. It is one of the desirable cuts for soup stock. It may also be used for stews. The more meaty section may be braised as a pot roast.

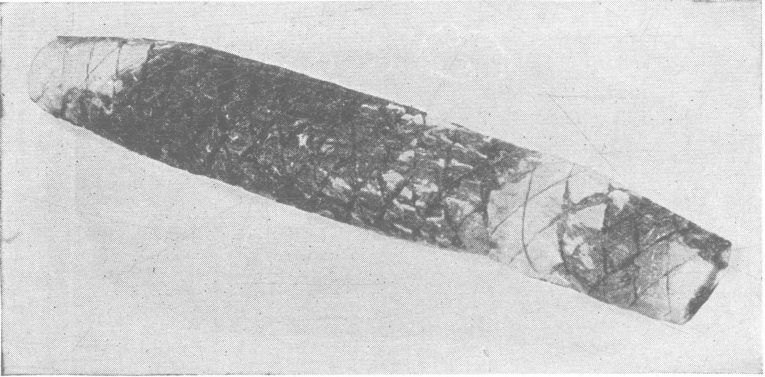


Fig. 24.—Scored and rolled flank steak. This cut is the one good portion from the flank. It usually weighs from 1 to 1½ pounds. Instead of scoring it may be skewered into a roll with a strip of salt pork in the center. Individual servings may then be cut from the roll and braised.

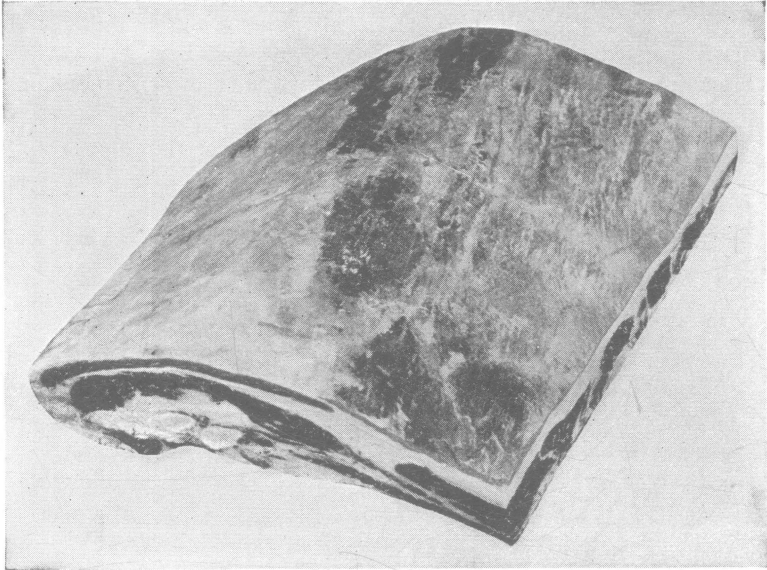


Fig. 25.—The plate or navel. This is the cut lying below the ribs. The strip of rib ends along the edge to the right is known as "short ribs." The part remaining after removal of strip of short ribs is the navel. The proportion of lean in both plate and brisket (Fig. 26) is low.

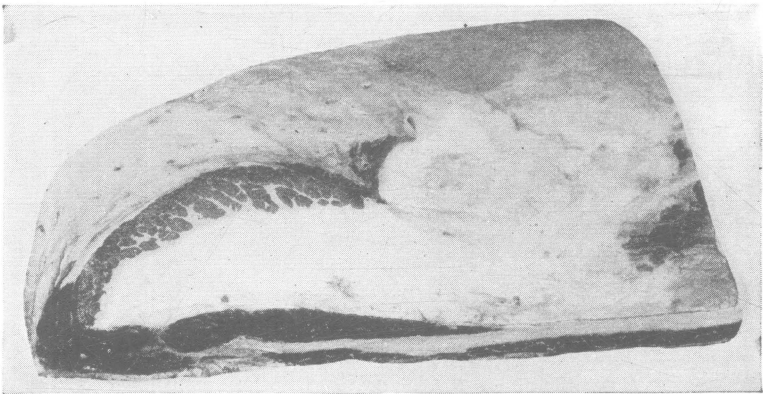


Fig. 26.—The brisket. This is the section below the chuck. It is a desirable cut for corning, but may be used fresh for stews.

VEAL, PORK, AND LAMB

Since veal, pork, and lamb are from smaller animals, there are fewer consumer cuts than in beef (see Figs. 4, 6, and 7 for wholesale division of the carcasses). The characteristics of cuts are similar to those of beef from the same part of the carcass. Rib and loin sections are usually cut into chops, although they may be roasted. Rib chops have the rib bone (see Figs. 27, 30, and 35), while those from the loin have the tenderloin eye of meat in addition to the outer muscle, which is larger (see Figs. 29, 30, and 31).

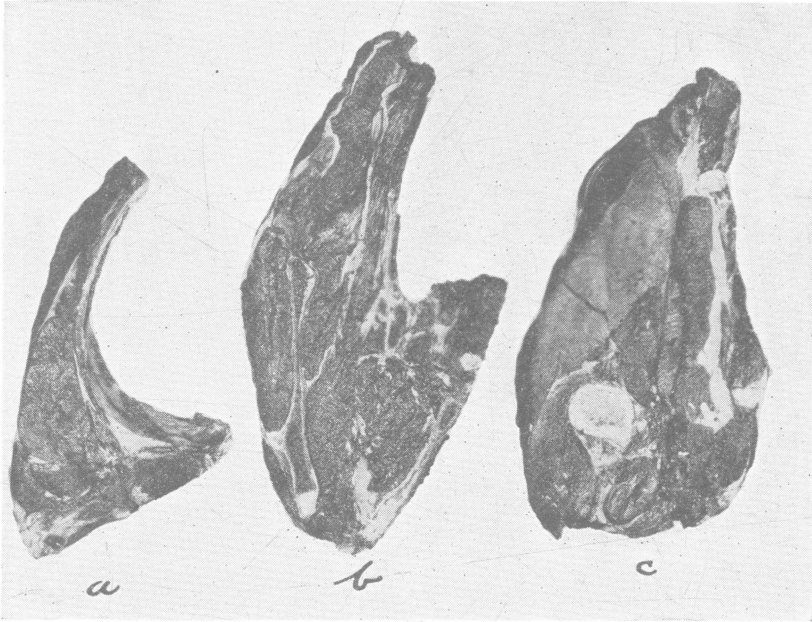


Fig. 27.—Veal chops: *a*, Rib chop; *b*, Rib end of shoulder; *c*, Lower end of shoulder.

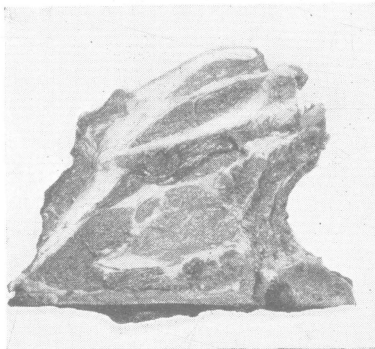


Fig. 28.—Pork shoulder chop.

Veal and lamb loin chops are sometimes cut with a section of kidney. English lamb chops are double loin chops—that is, they are cut across the saddle (see Fig. 31). They are usually boned and a section of kidney is skewered into the chop.

Lamb rib chops which have had the meat cut away exposing the end of the rib bone are called French chops (see Fig. 35*b*).

The characteristics of the shoulder section are the same as the chuck of beef. It contains the shoulder blade, which is usually not fully calcified because the animal

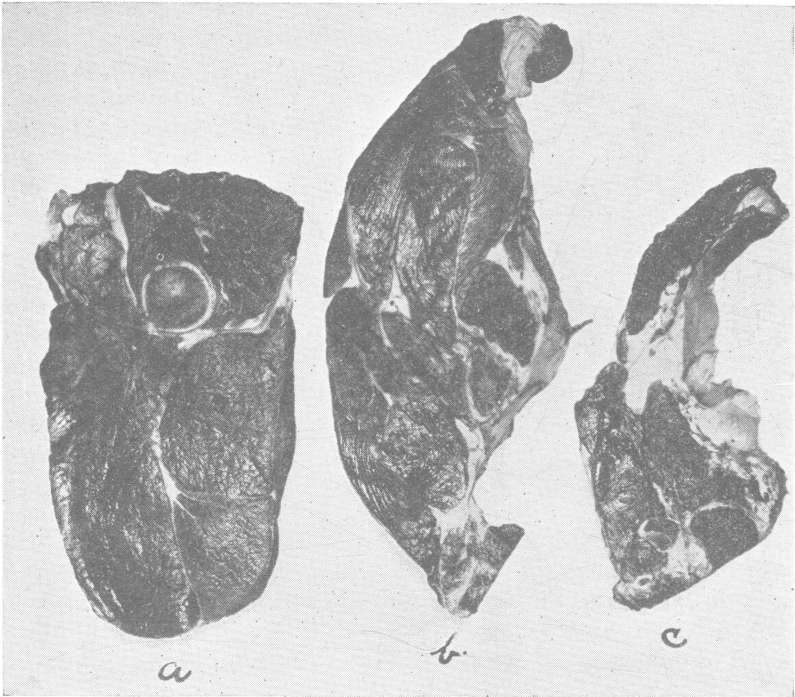


Fig. 29.—Veal chops: *a*, Cutlet; *b*, Loin end; *c*, Loin.

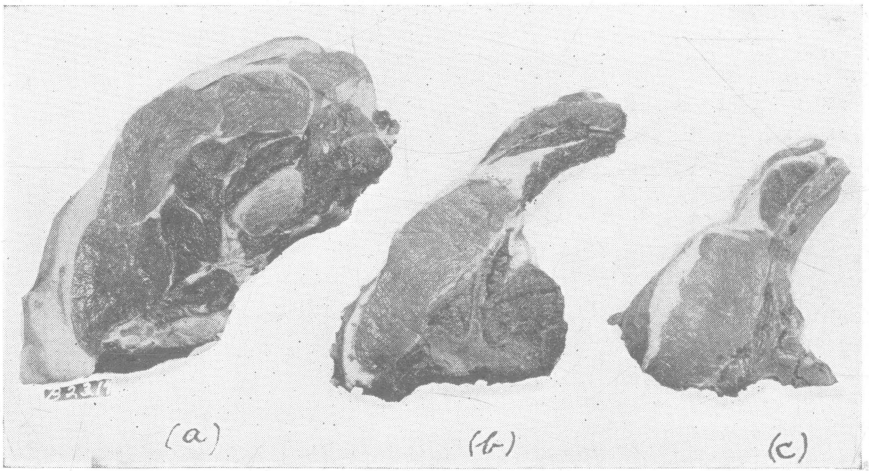


Fig. 30.—Pork chops: *a*, Loin end; *b*, Loin; *c*, Rib.

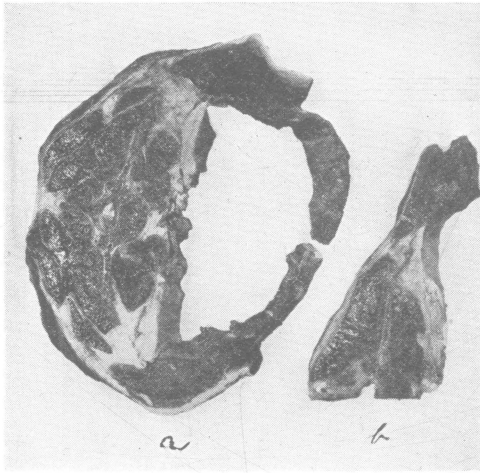


Fig. 31.—Lamb chops: *a*, English chop; *b*, Loin chop.

is young. The high percentage of connective tissue in the shoulder as well as the cartilage of the bones makes the shoulder one of the best cuts to buy for jellied meats. It should be bought with the bone in it for that purpose.

Square shoulders of veal, lamb, or pork may be boned and used with or without stuffing as "cushion" roasts. Stuffing is used largely to enhance flavor, but it also increases the number of servings obtainable. Such cuts are similar in appearance to beef chuck (see Fig. 19) but are smaller, of course, because the animals from which they are obtained are smaller than beef.

What corresponds to the plate and brisket of beef is called breast in lamb and in veal. It consists of a long narrow strip which is shallow in thickness and therefore not high in percentage of lean meat. The veal breast usually has a pocket cut in it for stuffing.

The ends of the ribs extend into the breast but are difficult to remove because of the thinness of the cut. Breast of veal is a good low priced cut.

The breast of lamb is often too small to be used as veal breast is used. Lamb breast may be rolled, tied, and braised, or used as stew or for ground lamb. The layer of lean is very thin in this cut.

Good quality bacon is well cured for flavor. It is fairly

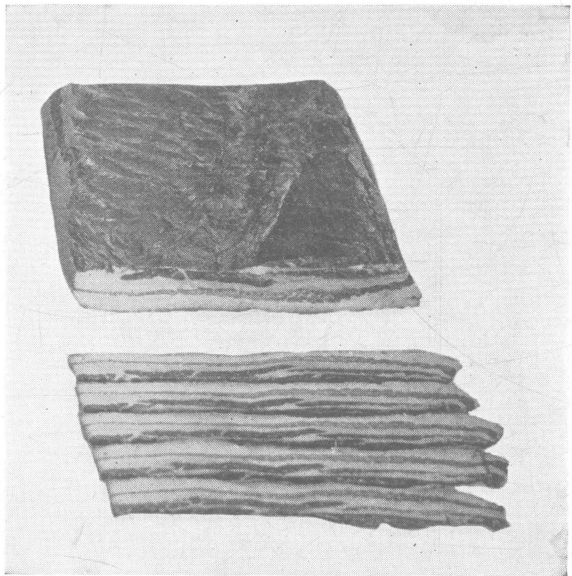


Fig. 32.—Good quality bacon is fairly evenly streaked with fat and lean.

evenly streaked with fat and lean, having somewhat more fat than lean (see Fig. 32).

Excessively fat bacon is a great waste in that it loses fat and shrinks during cookery. Excessively lean bacon is from poorly nourished animals and is dry and inferior to fat bacon in flavor.

The most desirable pork cut which is cured for ham is the hind leg (see Fig. 33). The shoulder or picnic ham (see Fig. 34), may have as desirable flavor, since flavor depends on the cure, but the proportion of fat is greater in the shoulder ham.

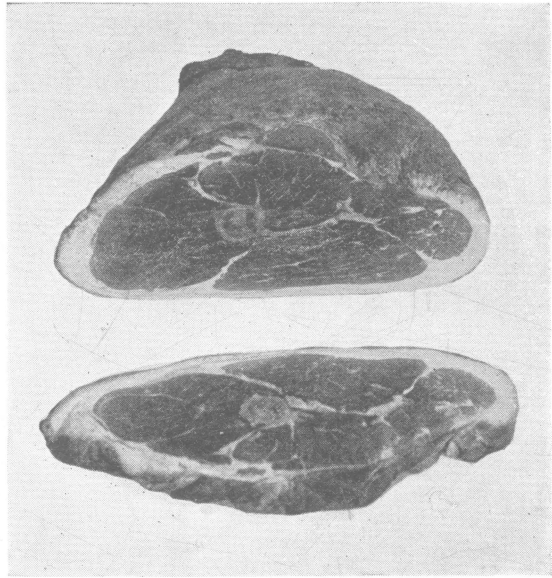


Fig. 33.—The ham is one of the choicest parts of the carcass.

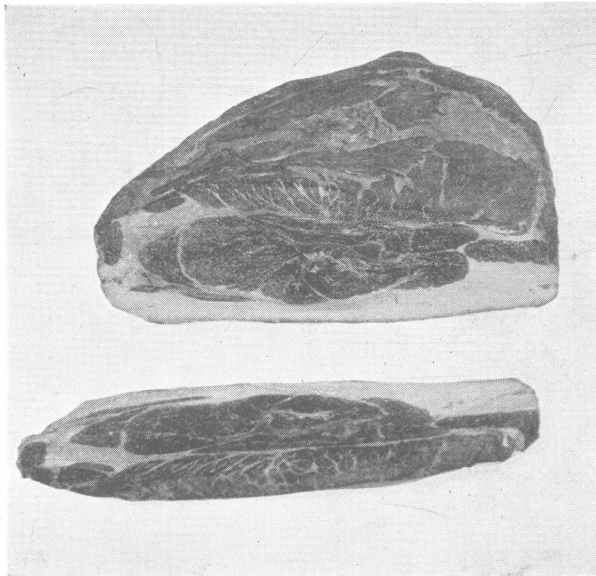


Fig. 34.—Shoulder ham, with slice. Compare this cut with Fig. 33.

The Boston butt (see chart, Fig. 7) is usually boned and cured as ham. It is wrapped in cellophane and sold whole as "cottage ham." It also has a high percentage of fat.

The price of ham depends on the location of the cut. Center slices from the hind leg are the most costly. Butt and shank ends and picnic hams cost less per pound than center slices. Cottage hams cost somewhat more than picnics or rump butts.

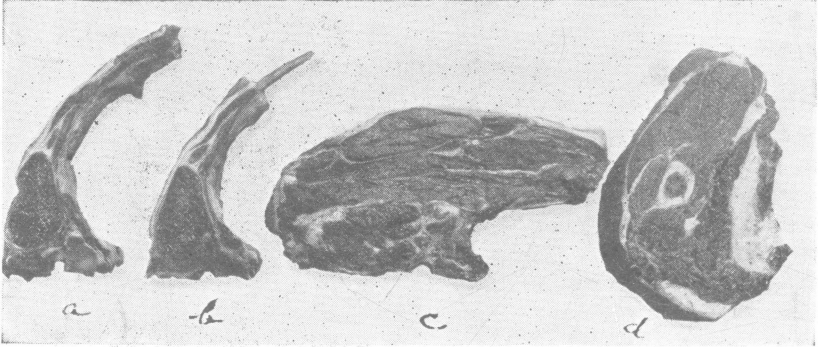


Fig. 35.—Lamb chops: *a*, Rib chop; *b*, Rib chop, frenched; *c*, Shoulder chop, rib end; *d*, Shoulder, lower part.

ANIMAL GLANDS AND SUNDRIES

From the standpoint of economy as well as variety and nutritive value, the homemaker will do well to make more use of animal glands and sundries. These include heart, kidney, liver, brains, sweetbreads, tongue, tripe, and oxtail (see Figs. 36 and 37). Because of the use of liver in pernicious anemia, the cost is

higher than formerly. Veal liver, due to its tenderness and mild flavor, is preferred to other kinds of liver, and for that reason is more expensive.

Young beef liver is very desirable and inexpensive and one kind of liver has as high nutritive value as another. Kidney, heart, tripe, and brains are inexpensive and valuable for variety. Sweetbreads are a delicacy and fairly high priced.

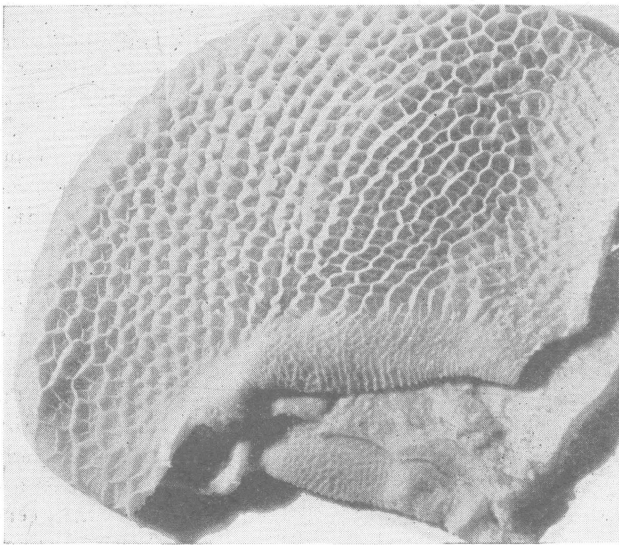


Fig. 36.—Honeycomb tripe, the basis for Philadelphia Pepper-pot soup.

MEAT CUTS SUITABLE FOR VARIOUS USES

Tender cuts of beef suitable for dry heat methods of cooking (broiling and roasting) are loin and rib cuts. Medium tender cuts especially desirable for braising are chuck, rump, and round. They require moist heat for part of the time for best results. Any of the least tender cuts such as heel of round, flank, neck, brisket, short ribs, navel, and shank may also be braised or cooked entirely in water. They require fairly long cooking periods in moist heat at simmering temperature.



Fig. 37.—*Top*, calves' hearts; *left*, calves' brains; *center*, sweetbreads; *right*, beef liver; *bottom*, beef kidneys.

All cuts of young pork of good quality are tender enough for dry heat methods of cookery. This applies to both fresh and cured pork.

Lamb and veal are similar to beef in that neck, shoulder or chuck, breast and shanks require some moist heat for best results. Among young animals, veal has a higher percentage of connective tissue in relation to lean than other animals. Many authorities on meat cookery agree that even the most tender cuts of veal are probably improved by some application of moist heat to gelatinize the connective tissue. The lack of fat marbling in veal is also one factor in its apparent lack of tenderness. Larding supplies fat and enhances the flavor. The

leg, loin, and rib sections of good quality veal may be satisfactorily roasted in open pan if a low oven temperature is used.

Of the animal glands and sundries, heart and tongue require moist heat treatment. They are much used muscles, and are among the least tender of such parts. Liver and kidney may be cooked by dry heat methods. Tripe may be breaded, sauted, or creamed after a preliminary parboiling of about ten minutes. Sweetbreads are very tender. They may be cooked by dry heat methods, but are more desirable if parboiled in salted acidulated water for 20 or 30 minutes preliminary to other methods of cooking.



Meat Preservation

Various methods are used for preserving meats for future use. Among these are refrigeration by chilling or freezing, packing meat in lard, canning, curing, and smoking the meat. These processes are described on the following pages.

REFRIGERATION

Cold storage either at chilling (32° to 39° F.) or freezing (16° to 21° F.) temperatures preserves meat in its fresh state. At chilling temperatures there is a definite time limit during which meats remain safe and palatable. The time varies with the temperature used as well as with the kind of meat. Some meats may be held longer than others without adverse effects on flavor. Ripening (which is the chemical change that occurs in meats as they hang in cold storage) is regarded as desirable for all meats except pork. Flavor, texture, juiciness, and cooking quality are all improved by ripening. Meats are allowed to hang for a time for ripening purposes, regardless of the need for preservation.

At freezing temperatures, meats may be held indefinitely. A recent development in the freezing of foods is called "quick freezing." It is superior to slow freezing in that smaller crystals are formed which do less damage to the texture of the food. When thawed, meats must be used immediately, because freezing tends to disintegrate the cells of all foods, thus making possible a more ready entrance of bacteria after the food is thawed.

The home refrigerator is usually not cold enough to preserve meat for more than a few days, although some mechanical refrigerators have special compartments where meats may be held for longer periods.

In some localities the farmer who wishes to hold his own meat in the fresh state may now rent cold storage locker space in town. Plants furnishing such service send a butcher to the farmer on slaughtering day. The butcher slaughters the animal and dresses it. The carcass is then taken to the cold storage plant, where it hangs in a chilling room until the natural heat has left and the meat is firm. The butcher then cuts the carcass into steaks, chops, and roasts and places the cuts on trays. The trays then go into a freezer where they are frozen solid. After freezing, the meat is taken to the locker room, which is cooled to around 14 or 15 degrees above zero. The meat is placed in the farmer's locker and the lock put on. Only the farmer and the storage house owner have keys to his lock.

The cost of the service is moderate, and the convenience and desirability great (see Fig. 38).

In cold weather and in climates where meats may be frozen on the farmer's own premises, fresh meat is possible during the cold weather without the necessity of renting locker space. The meat should be hung in a dark, cold place where the air is dry and free from odors. Obviously, it must be protected from animals and rodents.

If a temperature below 40° F. is maintained, the meat may be kept for several weeks. If frozen, the meat will keep indefinitely so long as it remains frozen. Alternate freezing and thawing mars the flavor of the meat and results in early spoilage.

Frozen meat may be packed in snow in barrels or earthenware jars. Thick layers of snow should be placed between the meat and the inner surface of the container, and also between the layers of meat. Each time meat is removed from the barrel or jar, the snow layer should be repacked on top.

PACKING MEAT IN LARD

A method that is commonly used in cold weather for preserving fresh pork and sausage is to partly cook the meat on both sides, pack it in an earthenware jar, and pour hot lard over it to seal it and exclude air. Meat may be removed as desired and completely cooked. The lard which was removed should be reheated and poured back over the remaining meat. The jars must be stored in a cold place.

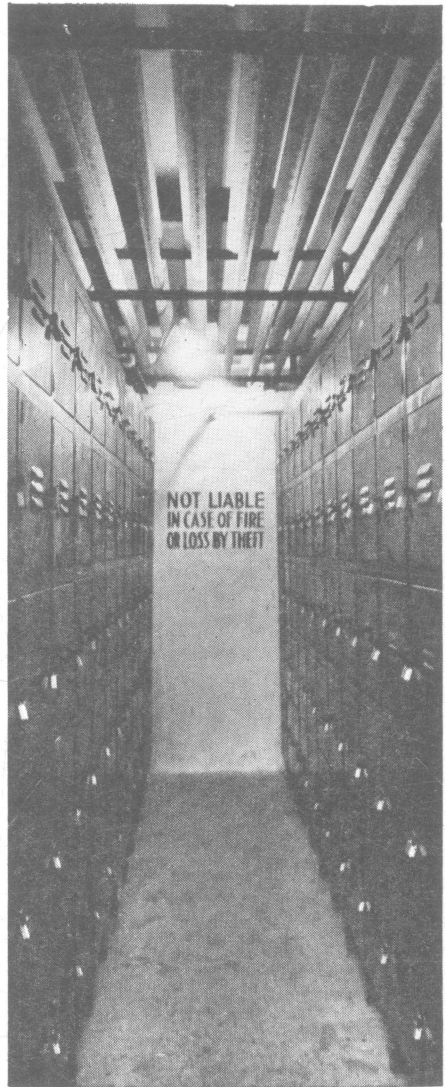


Fig. 38.—Meat lockers designed for renting.

CANNING OF MEATS

Canning is another method of preservation which retains the natural flavor of meat. Considerable variation is possible in the flavor of canned meats if the method of preparation preliminary to canning is varied. (For methods of can-

ning meats, refer to Home Canning for Better Family Meals, Extension Bulletin 104, Ohio State University.)

CURING OF MEATS

The sections on the curing and smoking of meats (pages 30 to 37) have been read and approved by L. E. KUNKLE, Department of Animal Husbandry, Ohio State University.

While the primary object in curing meats is to preserve them for future use, considerable variety of flavor is possible with different methods of curing. Too often the farmer thinks chiefly of preserving the meat, and pays too little attention to flavor and palatability.

Pork is the meat most frequently cured, but there is no reason why more variety may not be had by curing meats other than pork.

Meats which are to be cured should be thoroughly chilled before curing. They should not be frozen, as the cure cannot penetrate frozen meats. Incomplete penetration of the brine results in uneven flavor as well as imperfect preservation.

CONTAINERS USED FOR CURING MEATS

Large earthenware jars are probably best to use for curing meats, although if large quantities of meats are to be cured and funds are limited, the cost of earthenware may be prohibitive.

Hardwood barrels which are tight and free from objectionable odors or flavors may be used. The barrels must be either new or cleaned by scalding or burning out. Barrels which have been previously used for curing meats must be *thoroughly cleaned, scalded*, and aired if they are to be used again successfully. This point cannot be over-emphasized. *Failure to observe strict cleanliness* is one of the most prominent causes of off-flavors in home cured meats. Barrels which have been used for molasses may be cleaned by scalding. Vinegar barrels are not recommended unless all trace of vinegar can be burned out.

PRESERVATIVES USED IN CURING MEATS

The principal preservatives used are salt, sugar or molasses, and saltpeter. If meats are pickled, vinegar is also used, as for example, in the case of pickled pigs' feet. All of these preservatives are harmless. Saltpeter, which is used chiefly to retain red color in cured meats, may be unwholesome if used in large quantity. Its use is permitted by law, and since too large a quantity defeats the purpose of its use by giving a brown color and a pitted condition to the finished product, the quantity used is well regulated.

Salt tends to harden muscle fibers and extracts juices from the meat. If used in excess it impairs flavor. Sugar or molasses tends to keep meat fibers soft and tender. A combination of sugar and salt is desirable both from a flavor standpoint and because sugar tends to minimize the hardening action of salt.

The Curing of Pork

Thoroughly cool the meat to be cured. Cut the carcass. All parts of the carcass may be cured except the loins (which are preferred fresh for chops and roasts), spareribs (which are also used fresh), and trimmings, which are used for lard or sausage.

Hams, shoulders, and bacons may be cured by either brine or dry method. The dry method is easy and quick, but may lack uniformity of cure and flavor. Great care is needed in the application of the cure, particularly the first application. The brine method, if successfully used, gives a good quality product which is probably more uniformly cured than meats cured by the dry method. A longer time is required and there is chance for spoilage due to lack of cleanliness and sterilization. Careful checking of the brine is fundamental. The times for checking are at the overhauling periods. If the meat is carried successfully to the 30-day period, it will probably be safe. Fat backs and side meat may be dry cured or pickled in a plain salt brine. All corners and ragged edges should be trimmed off and used for lard or sausage.

In packing the meat in barrels or large earthenware containers the heavy hams and shoulders, because of the thickness of the pieces of meat, are best cured separately from thinner cuts such as bacon slabs and ribs. Thick pieces require a stronger brine. Hams and shoulders are packed closely together, skin side down, but should not be squeezed out of shape. Top layers should be packed with skin side up. Pour in the brine until the pack begins to shift or float slightly. This enables all parts of the meat to come in contact with the brine. All parts of the meat must be submerged in the brine. A block may be used to weight the meat down if necessary.

Bacon strips are placed skin side down, except top layers of meat which are packed with skin side up. Jowls and butts may be used to fill the open spaces.

METHODS OF CURING

Brine Method — Sugar Cure.—For each 100 pounds of pork use:

- 8 pounds of salt
- 2 pounds of sugar (brown or white sugar may be used)
- 2 ounces saltpeter (finely powdered)
- Boiling water— $4\frac{1}{2}$ gallons for heavy hams or shoulders;
 $5\frac{1}{2}$ or 6 gallons for bacon and other light cuts

Blend the dry ingredients thoroughly by rubbing them together. Add the boiling water and stir until dry ingredients are dissolved. When the brine is thoroughly cold, pour it over the meat, being sure that the brine *completely covers the meat at all times*. Keep the temperature as near 38° F. as possible while the meat is curing. The quantity of brine given above may not completely cover 100 pounds of meat unless the meat is well packed. If it does not, more brine of the same strength is needed to fill the container rather than adding water, which, of course, weakens the brine.

Dry Method — Sugar Cure.—The same 8-2-2 mixture is used for dry cure as is used in preparing brine cure. Although 5 pounds of salt generally would

be sufficient to cure 100 pounds of pork if all the salt were absorbed, it is advisable to use 8 pounds to allow for the mixture that falls off and is lost.

Mix together:

8 pounds of salt	2 ounces of saltpeter
2 pounds of sugar	(finely powdered)

After blending the mixture thoroughly, divide it in half.

Apply one-half by rubbing it on the outer surface of the meat. On the third day apply another portion and on the tenth day apply the remainder.

CURING TIME

Brine Method.—Heavy hams and shoulders require 3 days per pound in the piece. Bacon can be cured in $1\frac{1}{2}$ to 2 days per pound. The milder the cure the more palatable the meat, but the poorer its keeping quality. Meats to be held through the summer may require a slightly longer curing time, heavy hams and shoulders being cured for 60 days.

Dry Method.—Two days for each pound in the piece is the standard time for dry curing. However, it is usually safer to keep 8- to 10-pound hams in the curing mixture for 25 to 30 days, because of the thickness of the pieces of meat. At the end of the curing time the meat is washed in warm water and hung to dry for a day, after which it is ready for smoking.

Smoked cured meat will have a brighter color and a milder flavor if it is freshened by soaking in cold water before being smoked. Hams and shoulders may be soaked 2 hours and bacon 30 minutes to produce greater uniformity of saltiness. If meats are to be held for summer use, it is best not to soak them. *Under no circumstances* should meats be placed in fresh water and allowed to stand indefinitely.

OVERHAULING THE PACK

Brine Method.—On the fifth, the fifteenth, and the thirtieth days after being put down, hams and shoulders should be overhauled. They may be transferred to another container and re-covered with the same brine, or both meat and brine may be removed and repacked in the same container. This overhauling remixes the brine and insures contact of all parts of the meat with the brine. Overhauling bacon slabs and other lighter cuts on the third and tenth days is usually sufficient.

Dry Method.—In applying the remainder of the dry cure after the first rubbing (as described above) the meat is overhauled. The pieces at the top of the origin 1 pack should be placed at the bottom when the meat is resalted. One overhauling on the third day is usually sufficient for bacon.

CHANGING THE BRINE

A thin scum of white mold usually forms on top of the brine. If the mold becomes heavy and hard, or if the pickle becomes ropy due to bacterial growth, the brine should be changed. Remove the meat and scrub it with a brush and warm water. Repack in a clean barrel and cover it with a new brine of about the saltiness of the old brine at the time it was discarded.

If a salimeter is available the brine may be accurately controlled. If no salimeter is available for testing the brine, vary the amount of water used in making the new brine according to the length of time the meat has been in the cure. If the meat has been in the cure for a week, probably 5 gallons of water instead of 4½ gallons as used in the original brine will give the right density. If the meat has been in the cure for more than 2 weeks, 5½ gallons of water will be about the right amount. Maintain the original curing schedule.

Repacking in a new brine does not necessarily insure saving the meat. Much spoilage can be prevented by using clean curing equipment, by boiling the water used in making the brine, and by thoroughly cooling the meat before starting the cure.



Smoking the Meat

The smoking of cured meats aids in their preservation and gives desirable flavor, provided suitable fuels are used. The creosote of wood smoke is deposited on the exterior of the meat during the smoking process. Creosote repels some insects and has some preservative action. Smoking aids in preservation partly because of its drying action on the surface of the meat.

For flavor, green hickory wood is preferred, although other hardwoods, including oak, applewood, maple, or ash are satisfactory. Corn cobs may be used, but the chief objection to corn cobs is the fine ash which is formed. This ash is usually carried up in the smoke and is deposited on the meat, giving a dirty appearance. Resinous woods are objectionable because of the blackened appearance and the undesirable flavor which they give to the meat. If hickory wood is not available, juniper berries and fragrant woods may be added to the fire to give pleasing flavor.

PROPRIETARY SMOKING PREPARATIONS

These include smoked salt, smoke salt, and liquid smoke. The preparations are not used commercially, because the finished product has not been exposed to smoke from a fire, and hence cannot qualify on the basis of definition as contained in regulations governing U. S. Dept. of Agriculture meat inspection.

For home use, smoked salt, which is prepared by exposing salt to smoke from an open fire, may be recommended where labor is scarce and ease of curing is demanded. The cost of smoked salt is greater, and the finished product lacks the preserving effects of the dried surface and the creosote resulting from smoking.

THE SMOKEHOUSE

If the amount of smoking practiced is sufficient to justify a permanent smokehouse, it is well to use a fireproof construction such as concrete, brick, or stone. Frame houses are possible if the fire is confined to the center of the floor or is built in a large iron kettle or other fireproof container. Fires are sometimes built in a small furnace pit about 10 feet from the smokehouse. Under such circumstances, the smoke is carried to smokehouse by means of a galvanized pipe.

For the ordinary family a smokehouse 8 feet square and 8 to 10 feet high is adequate. This permits the meat to be hung 6 or 7 feet from the fire and near enough to the roof to get the benefit of the thick smoke.

Good ventilation and draft must be provided for. Air intake is needed near the fire and a smoke and moisture outlet under the eaves of the house.

THE SMOKING PROCESS

Meats that have been cured in a brine should be removed from the brine at least a day before they are to be smoked. After washing in warm water they are hung in the smokehouse to dry. The pieces of meat are hung so they do not touch each other. If meats have been frozen they must be thawed before starting to smoke them.

Cured pork may be smoked slowly by regulating the temperature from 70° to 90° F. by rebuilding the fires intermittently over a period of one to several weeks. Slowly smoked pork is best for holding into the summer months. The increased drying which occurs in meats smoked slowly aids in their preservation and in the development of the pungent flavor characteristic of smoked pork that has been aged several months.

A temperature of 100° to 120° F. may also be used for smoking, in which case the smoking process is completed more rapidly. Two or three days should give the meat a rich mahogany brown color. Very hot fires dry the surface of the meat excessively, thus preventing adequate penetration of the smoke. They are also a hazard so far as the safety of the meat is concerned. It is usually recommended that temperatures not go above 120° F.

The length of time for smoking varies with the size of the cuts and the temperature used for smoking. It may vary from two or three days to several weeks. The meat should be well colored when finished. After the smoking is finished, the ventilator of the smoke house should be opened to permit thorough cooling of the meat, but the meat should not be allowed to freeze. As the meat cools it becomes firm and hard. It is then ready for storage.

TESTING SMOKED MEATS

A ham trier or a length of stiff wire sharpened at one end may be used to test smoked meats. It is run along the bone to the center of the ham from both hock and loin ends. Shoulders are tried in the shank, at the shoulder joint, and under the blade bone. If the trier brings out a sweet, smoky odor, the meat is sound. If it has a disagreeable odor, the meat should be cut open and examined for spoilage. Any meat having a definite odor of putrefaction is best destroyed.

Most meats that have safely reached the smoking stage may be considered sound. Occasionally sourness in smoked pork can be detected while the meat is warm, or a taint may be noticeable a week or two after smoking.

STORAGE OF SMOKED MEATS

For successful storage of meats, the chief points to remember are that the meat must be thoroughly cured if it is to keep indefinitely; it must also be thoroughly cold and firm to prevent sweating and the rapid spoilage that results under such circumstances. It should not be stacked in piles but hung so that pieces do not touch each other. A cool temperature is needed for all meat stor-

age, including cured meats. Dry atmosphere is essential. Even the best cured meats will mold if stored in damp cellars.

Protective coverings are necessary to exclude molds, flies, and insects, but it is equally important to know that meats have not been contaminated by exposure to destructive agents before wrapping. In case they have, spoilage will go on under the most carefully applied coverings. Wrappings may consist of clean heavy white paper or parchment with a muslin cover sewed on the outside.

Since fats become rancid more readily in the light, a dark storage place is to be preferred. Good ventilation is also fundamental for the prevention of off flavors.

Bacon, because of its high fat content, does not store so well as hams and shoulders. It is usually more palatable when freshly cured and smoked.



Sausage and Related Products

Many small pieces, trimmings, and scraps which are not usable for other purposes are suitable for the making of sausage. Salt and spices are used for seasoning, but the quantity varies depending on personal preference.

PORK SAUSAGE

Fresh pork scraps or less choice parts of the carcass are used for making sausage. The meat is usually in the proportion of two-thirds lean pork to one-third fat, and the meat should be ground very fine. The ground meat is more easily and evenly seasoned if spread out. Many formulas for sausage are available. The following proportions give satisfactory flavor:

6 pounds meat
1 $\frac{3}{4}$ oz. fine salt (2 oz. for smoked sausage)
 $\frac{1}{2}$ oz. black pepper
 $\frac{1}{2}$ oz. or less of ground sage.

After the seasoning is well mixed with the meat, the meat may be reground.

Sausage may be used in this form, it may be packed into cloth bags and sliced when ready to use, or it may be stuffed into casings and made into links. If link sausage is to be kept for some time it may be smoked (see page 34). Bulk sausage may also be smoked if previously packed in cloth bags.

A method of preserving fresh sausage by partially cooking and sealing in hot lard was suggested on page 29.

Bulk sausage sometimes crumbles undesirably when sliced and fried. Adding a scant three-fourths cup of cold water to the above formula and kneading well until the sausage becomes sticky and dough-like will prevent crumbling. Allow it to chill thoroughly before slicing it.

SCRAPPLE

The heads and feet of hogs are usually used for making scrapple, although other parts may be used. Cook the meat until it falls from the bones. Grind the meat through a fine plate. Remove bones from the liquor in which the meat

was cooked and return the meat to it. Bring to a boil and thicken with cereal. The cereal is usually cornmeal, but may be a mixture of cornmeal, white flour, or buckwheat flour and shorts. A proportion which gives a richly flavored scrapple is as follows: 4 parts ground cooked meat, 3 parts liquor, 1 part dry cereal mixture. (These proportions are by weight.)

After adding the cereal to the boiling meat and liquor, boil for about $\frac{1}{2}$ hour, stirring often to prevent sticking. Add seasoning shortly before the cooking is finished and stir it in well. Salt and pepper only may be used, or the following mixture of seasonings if desired:

For 50 pounds of scrapple

1 to $1\frac{1}{4}$ lbs. salt	$\frac{1}{2}$ ounce red pepper
1 to 2 ounces black pepper	$\frac{1}{2}$ ounce nutmeg
1 to 2 ounces sweet marjoram	$\frac{1}{2}$ ounce mace
1 to 2 ounces ground sage	1 pound ground onions (added during second cooking)

LARD

Rendering Lard.—The leaf fat yields the highest quality of lard, but often the leaf fat, the fat back, and fat trimmings are combined. Caul and ruffle fats yield a poorer quality product than other fats. If such fats are well washed and chilled they usually have acceptable odor and flavor.

Cut fat into small pieces or grind it to facilitate rapid and complete rendering. Stirring to prevent sticking and burning can be better accomplished if only a small amount of fat is placed in the kettle at the beginning. As the fat melts the remainder of the trimmings can be added. It is important to maintain a low fire to avoid not only sticking and burning but also decomposition of the fat. As water contained in the fat tissues evaporates the temperature of the fat will slowly rise, *but it should not go above 240° or 255° F.*

During the rendering process the cracklings will brown and float. When they are more completely rendered and the moisture has evaporated from them they will sink to the bottom. At this stage the fire may be allowed to die down and stirring may be less frequent or discontinued entirely to permit cracklings to settle. It is possible to stop the cooking while most of the cracklings are floating, but the lard will have a higher moisture content and will not keep so well.

It is well to allow the rendered lard to cool somewhat and settle before emptying the kettle. The clear lard may be dipped or siphoned into containers. The remainder of the lard is usually put through a lard press and strained through a screen covered with several layers of cheesecloth.

If the hot lard can be put into 5- or 10-pound containers and stored immediately at temperatures near or below freezing, it will chill rapidly enough to produce a fine grain.

Storage of Lard.—All fats become rancid when stored in a light place in contact with the air. Containers should be filled full, sealed with a tight cover, and stored in a dark, cool place. Lard containing too high a moisture content due to incomplete rendering may develop a type of spoilage called water-souring.

Curing of Beef

The most common methods for curing beef are corning and drying, formulas for which follow:

CORNED BEEF

Less tender cuts of beef such as the plate and the chuck are generally used in making corned beef. Meat from fat animals makes better corned beef than that from thin animals.

Cut the beef into pieces 5 or 6 inches square and of uniform thickness. As soon as the beef is thoroughly cooled after slaughtering, it should be cured. It should not be frozen, as the cure cannot penetrate frozen meat.

For 100 pounds of beef allow 8 pounds of salt. Sprinkle a layer of salt $\frac{1}{4}$ inch deep over the bottom of the vessel. Pack the cuts on the salt layer as closely as possible. Add alternate layers of salt and meat, being sure to cover the top layer with a fairly heavy layer of salt.

Allow the salted meat to stand overnight, then add the following solution:

For 100 pounds of meat:

4 pounds sugar	4 ounces finely powdered saltpeter
2 ounces baking soda	1 gallon boiling water

Mix thoroughly to dissolve the dry ingredients, adding any salt that may remain from the salting process. Then add 3 more gallons of boiling water. When cold, pour brine over the meat. It is very important to keep meat entirely submerged in the brine at all times. A weight will probably be necessary to hold the meat under the brine.

To cure thoroughly, the meat should be kept in the brine from 28 to 40 days. While curing and later it should be kept in a cool place to avoid fermentation or other spoilage.

Corned beef held into the spring or summer must be watched carefully for spoilage. If the brine appears ropy, the meat should be removed, scrubbed vigorously with a brush and hot water, and repacked in a clean container with a new brine.

DRIED BEEF

The round is commonly used for dried beef, the inside of the thigh being more tender than the outer muscle. In cutting the round for curing as dried beef, the division should be made lengthwise of the grain in order that the fibers may be cut crosswise when the dried beef is sliced for table use.

Cure the meat by rubbing it with the ingredients described under corning with the exception of adding an additional pound of sugar per 100 pounds of beef. Add no water but weight the meat down so that juices will be extracted to form a brine. Use same curing time as suggested under corning. After removal from the brine, the meat is drained until dry and is then smoked (see directions on page 34). Later, it is hung in a dry place where the water will evaporate from it.

It is ready for using any time after smoking, but the longer it hangs in dry air the drier it becomes.

In arid regions the meat may be dried by exposing it fresh to the air. (It must, of course, be protected from flies.)

Meat Cookery

Meat is cooked to destroy bacteria and parasites, and to improve the appearance and flavor. The tenderness of tender cuts should be maintained, while the tenderness of the less tender cuts must be increased in order to make the meat palatable.

Lean meat is made up of bundles of meat fibers held together by connective tissue.

The meat from most young animals and from the least exercised muscles of more mature animals is tender. It has a small amount of connective tissue and delicate cell walls. The extractives which give flavor to meat are not so well developed in tender meats as in the more used muscles. Less tender meats have coarser fibers and a large amount of connective tissue. They have much more flavor than tender cuts.

The white connective tissue which binds fibers together can be changed to gelatin by cooking for a long time in moist heat. Both high and low temperatures will form gelatin, but since low temperatures keep the meat fibers more tender, they are more desirable. Yellow connective tissue is not changed by cooking in moist heat, but remains tough.

One of the most fundamental points in connection with meat cookery is to know the nature of the cut to be cooked and the proper method to use in cooking it. This involves either some knowledge of cuts or dependence upon the reliability of the dealer to sell a cut which is suitable for one's need.

Methods of Meat Cookery.—Meat cookery methods are divided into dry heat and moist heat methods or a combination of the two. Dry heat can be applied successfully only to tender cuts of meat, since dry heat has no effect in making meat tender. Cuts which are less tender may have dry heat applied for part of the time if the flavor due to browning is desired, but they must have moist heat applied for the major part of the cooking period in order that the cooked meat may be tender and palatable.

Dry heat methods of cooking meats are broiling, pan-broiling, roasting or baking, and frying. Moist heat methods are steaming, stewing, and simmering (sometimes called boiling, although simmering rather than boiling temperature is used). Braising or pot roasting is a combination of moist and dry heat. The term fricassee is applied to braised meats which have been cut into small pieces before cooking.

Temperatures for Meat Cookery.—High temperatures, whether with dry or moist heat, toughen meats. High temperatures are also one cause of excessive shrinkage of meats during cooking. This fact is the basis for the recent radical changes in the dry heat methods of cooking meats. Meats roasted at low temperatures are more uniformly cooked throughout, shrink less, and are more tender. The typical meat flavor is more pronounced and the meat is more juicy than when high temperatures are used.

Searing at about 500° F. for 20 to 30 minutes is still an optional matter. It does not necessarily prevent loss of juices as was formerly thought, and it toughens the outer layer, but it does give a brown layer of pleasing flavor which

most people like. If the meat is roasted for the remainder of the time at low temperature a tender product will result.

It is usually possible to obtain a fairly brown layer without searing if an oven temperature of 350° F. is used for the whole cooking time. This temperature is low enough to maintain tenderness and juiciness and does not require quite so long a time as 250° or 300° F.

Cooking Losses.—Studies of the losses in meat roasting have led to open pan roasting. Evaporation of water is greater in the open pan, but nutrients and flavor substances are better retained.

Fat losses are less consistent than those of other constituents. This is probably due to unequal distribution of the fat. Fat on or near the surface will be lost to a greater extent than fat on the interior, because of the slowness of heat penetration. Not all fat that liquefies is lost because it can and does penetrate to the interior. Some studies have shown that 10 per cent of the fat melted during cooking penetrated the lean and actually increased the fat content of the lean by 1 to 2 per cent.

High temperatures cause greater fat losses than low temperatures. The change from solid to liquid form is the main cause of loss of fat.

Shrinkage of Meat During Cookery.—Shrinkage in cooked meats starts at 140° F. The higher the interior temperature of the meat or the stage of doneness, and the higher the oven or water temperature used to cook meats, the greater the shrinkage. Meats roasted for the whole time at a high oven temperature may shrink as much as 40 to 60 per cent as compared to 18 or 20 per cent at low temperatures. Excess shrinkage may be considered partly an economic matter, in that fewer servings can be had from meats which have been allowed to shrink excessively while cooking them.

Basting.—Basting consists of pouring meat drippings over the surface of meat while it is roasting. The chief purpose of basting is to keep the surface moist. With the newer methods and temperatures of roasting, basting is unnecessary because the meat does not become dry if roasted at low temperature.

Salting.—When shall salting be done? If the piece of meat is large, it is not possible to salt the interior, because salt does not penetrate a roast to greater depth than ½ inch. Putting much salt on the outer surface may result in too salty an outer layer or salty drippings. The outer layer is also crusty. Salt retards browning of meat and for that reason, if for no other, is best applied to steaks and chops when they are ready for the platter or after they are cooked and browned on one side.

Meat loaves cannot be well seasoned except by mixing salt with the meat before shaping the loaf. Small pieces of meat, as in stew, can be seasoned by adding salt to the cooking water. Total losses from the meat seem to be no greater than in unsalted stews.

While it may be readily observed that salting a raw or slightly cooked surface of meat draws juice to the surface, it is not yet proved that salting meats before or during cookery results in any greater total losses from the meat than occur if meats are not salted. More information is needed on the effect of salting on cooking losses.

ROASTING

Select a tender cut.

Procedures for roasting are now so simple and easy that the most inexperienced cook can apply them.

Wipe the roast with a damp cloth. If any undesirable portions are present, trim them off. (Government stamps need not be trimmed off.) Place the meat on a rack in the pan. Expensive roasters are not necessary—a sheet iron dripping pan will answer the purpose (see Fig. 39). *Add no water.* If a thermometer is used to determine the stage of doneness, insert the bulb in the center of the thickest portion of the meat. Place the pan in an oven of 250°, 300°, or 350° F. Roast to the desired stage of doneness.



Fig. 39.—A rib roast of beef ready for the oven. A thermometer insures accurate roasting.

How to Know When the Roast is Done.—The most accurate roasting is done with a meat thermometer. Such a thermometer can be had for about \$1.50. When the thermometer shows the necessary reading, the meat is done.

A range of temperatures is possible for beef cooked to various stages. The thermometer readings usually given for rare, medium, and well done beef are:

- 135° to 140° F. for rare beef
- 150° to 160° F. for medium beef
- 165° to 170° F. for well done beef.

Fresh pork must be cooked well done to insure safety. A parasite, *trichinella spiralis*, may occur in pork and must be destroyed in cooking.

Veal, lamb, fresh and cured pork are cooked as follows:

Veal	160° to 165° F.
Lamb (slightly rare)	175° F.
Lamb (well done)	182° F.
Cured pork	160° to 170° F.
Fresh pork	185° F.

Thermometers for the homemaker are now to be had which have no temperature scale marked on them but only the height to which the mercury column must rise for various meats cooked to various stages.

If no thermometer is available, the only alternative is to cook by minutes per pound. This is much less accurate, because pieces of meat of the same weight may vary so much in shape, thickness, and in proportion of meat to bone as to cause a difference in roasting time. For example, a rolled roast weighing 5 pounds which is of wide diameter and shallow depth will require much less time than a roast of the same weight which is narrow in diameter but deep.

Most of the fairly successful time tables available are based on high searing temperature for 20 to 30 minutes and a temperature of 300° or 350° F. for the remainder of the time. The usual time periods given are 15 to 18 minutes per pound for rare, 20 to 25 minutes for medium, and 28 to 30 minutes for well done meat.

If a temperature of 350° F. is used for the whole roasting period, the time per pound will range from 28 to 42 minutes, depending on size and shape of roast and stage of doneness desired.

BROILING

Heat the broiler to about 450° F. A few minutes before using place broiler pan about 4 inches from source of heat. Wipe meat with damp cloth and remove any undesirable portions. Grease the rack with suet on a fork to prevent meat from sticking to rack. Place meat on rack and cook for about half the required cooking time. Salt, turn, and finish cooking. When turning meat place fork in outer edges of meat to avoid loss of juices.

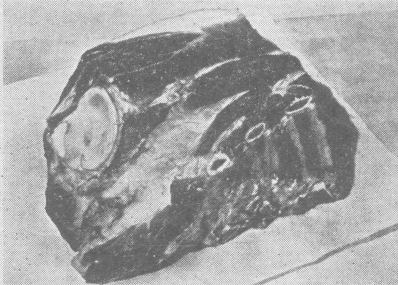
The approximate time for broiling a 1-inch steak at 450° F. is from 9 to 12 minutes, according to weight of steak. To test, pull fibers of thick section apart, using two forks. Color of juice shows interior color.

Pan Broiling.—Heat heavy metal skillet until it smokes slightly. Using a piece of suet on a fork, grease surface of pan to keep meat from sticking. Place meat in hot pan. Cook first on one side, then on the other, until the desired stage of doneness is reached.

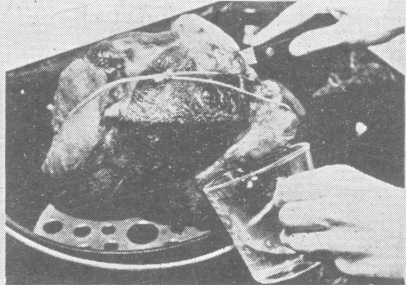
Apply test as given under broiling.

Pan Broiling Bacon.—The pan broiling of bacon is distinct from other pan broiling procedures. The slices of bacon are placed in a cold pan and heated slowly with frequent turning until crisp. If a large amount of bacon is being cooked at one time, much of the fat must be drained off, but the bacon will brown more evenly if a small amount of fat is left in the pan. Too hot a fire and lack of attention are the most prominent causes of poorly cooked bacon.

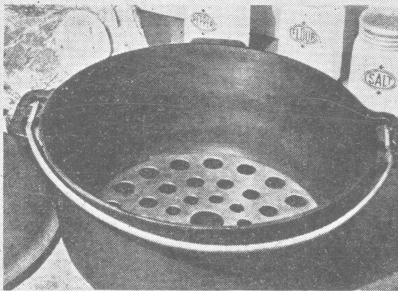
Pot-roasting a less-tender cut



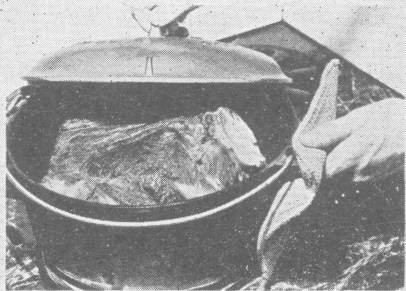
For a pot roast, select beef chuck, rump, or round 1



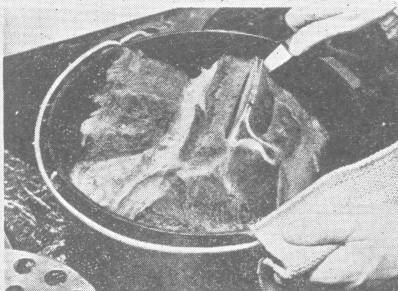
Add a little water—about one-half cup 4



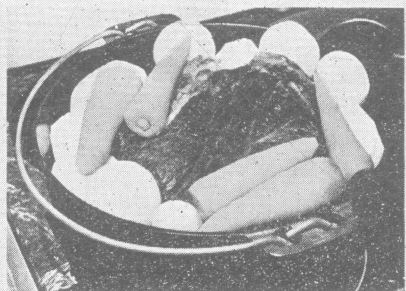
Use a pot with close-fitting lid and a rack 2



Cover and cook slowly until tender all through 5



Brown in beef fat to give rich flavor 3



Add vegetables during the last hour 6

Long, slow cooking with a lid to hold in the steam is the way to make tough meat tender

MEAT COOKING CHART NO. 5
BUREAU OF HOME ECONOMICS, U.S. DEPARTMENT OF AGRICULTURE

Fig. 40.—What is more delicious than a pot roast with vegetables, when well-cooked and seasoned?

BRAISING OR POT ROASTING

Dry heat may be applied by pan broiling, frying, or baking. A small amount of moisture is then added from time to time to form steam to make the meat tender. Avoid excess of water which tends to yield a product resembling stew. The brown outer surface should be retained. Cook meat until thoroughly tender, but avoid cooking until the meat falls apart. If overcooked, the meat will not slice well (see Fig. 40).

STEWING OR SIMMERING

Cut meat into $1\frac{1}{2}$ - or 2-inch cubes. For brown stew, brown part or all of the meat in small amount of fat, add water to cover and seasonings. Simmer until tender. For plain stew, omit browning of meat. Use hot water to start cooking.

Whole pieces of meat and hams may also be cooked at simmering temperature until tender. Ham allowed to cool in the liquor is juicier than ham removed from the liquor as soon as it is tender. Meats cooked by this method are often described as "boiled" meats, but simmering temperature is used to cook them.

BREADING

Beat egg slightly. Add one or two tablespoons of water or milk per egg. Dip meat in bread or cracker crumbs, then in egg, and again in crumbs. Fry in sufficient fat to form a brown crust. In turning meat be careful to avoid breaking or loss of crust. Season and cook meat until done.

Deep fat may be used if preferred for products such as breaded oysters which will cook done by the time they are browned.

FRYING

Pan Frying.—Add enough fat to a hot frying pan to form a layer of melted fat $\frac{1}{4}$ to $\frac{1}{2}$ inch deep. Meat may or may not be dipped in flour before being placed in the fat. Brown meat on both sides and continue cooking until done.

Deep Fat Frying.—Melt sufficient fat in deep fat frying kettle to cover food to be cooked. Kettle of narrow diameter is best for the purpose, as it exposes only a small surface of fat to the air, which aids in preventing decomposition of the fat. A thermometer with a scale registering as high as 400° to 450° F. is useful for taking temperatures of the fat, both because the temperature of the fat can be more accurately known and because the fat can be protected against overheating. If no thermometer is available, a cube of bread may be browned in the fat to test the temperature. If the cube browns in 60 seconds, the fat is of about the right temperature for frying raw foods. If the cube browns in 40 seconds the temperature of the fat is suitable for browning and heating cooked foods.

Meats are sometimes dipped in flour, egg and crumbs, or batter previous to frying. Meats can be deep-fat fried only if they will cook done in the browning time or if they are cooked foods which require only reheating and browning. Halves of chickens may be steamed partially done before being deep-fat fried.

Temperature Ranges for Deep Fat Frying

Cooked foods to be browned (croquettes, fish cakes) 375° to 390° F.

Raw foods to be cooked as well as browned . 360° to 375° F.

After frying, foods should be drained on absorbent paper to remove excess fat.

SOUP STOCK

In making meat soups, the more exercised muscles such as leg or neck sections are used because they have the most flavor and are the cheapest to buy. Beef is the most commonly used meat for stock. Veal has too little flavor to be used alone, but may be combined with other meats. Lamb or mutton gives excellent broth but should be used only when lamb or mutton flavor is desired. Bones and meat from poultry also make desirable additions to the soup kettle.

In preparing the meat for making soup, the more surface of meat exposed to the water, the more flavor will be extracted. This means cutting the meat into small cubes or grinding it through a coarse grinder rather than cooking it in one piece. The meat may be soaked for $\frac{1}{2}$ to 1 hour in cold water. The cooking is started in cold water and the water is allowed to simmer for 3 to 4 hours. Some bone and some fat cooked with the lean meat improves the flavor, but most of the typical meat flavor is due to extractives from the lean.

Vegetables and seasonings are added during the last hour of cooking. When cooking is finished pour stock through a colander to remove meat, bone, and seasonings. Allow stock to cool. Remove hard fat layer from the top and clarify the stock if a clear soup is desired.

The only difference between brown and white soup stock is that in brown stock about one-third of the meat cubes are browned. Water may then be added to dissolve brown matter from the pan. Add browned meat and liquor to soup kettle in which remaining cubes have been placed in cold water.



The Carving of Meat

Successful carving is partly dependent upon some knowledge of the anatomy of the cut to be carved. It is important to know something of the location of joints and the direction in which the fibers run. In so far as possible, meats should be carved across the grain.

Knives for carving should be well sharpened and of good quality steel which will hold an edge well. The size of the carving set will vary with the size of the cut to be carved.

It is important to learn to carve speedily in order that the food may not have time to become cold. Neatness and economy of cutting are also to be considered. If some parts of the meat are better than others, such parts should be divided among those at the table rather than giving all the good portions to the first ones served.

Enough meat to serve all at table should be carved before starting to serve the plates. The slices are arranged neatly on the platter. Before asking people to be served a second time, some meat should be carved and ready.

CARVING BEEF

Beefsteak.—Steak is one of the easiest of meats to carve. With the steak lying flat upon the platter the fork is inserted in suitable position for holding the steak firmly in position. Steaks from the loin (club, T-bone, porterhouse, and sirloin) have the bone separated from the meat before carving the meat. The knife is allowed to follow the bone closely until the meat is completely separated. The meat is then cut into pieces of suitable size for serving. This will depend partly on the thickness of the steak. Porterhouse and T-bone steaks are usually carved so that each person may receive some tenderloin and some outer muscle (see Fig. 41). Steaks are cut with rather than across the fiber.

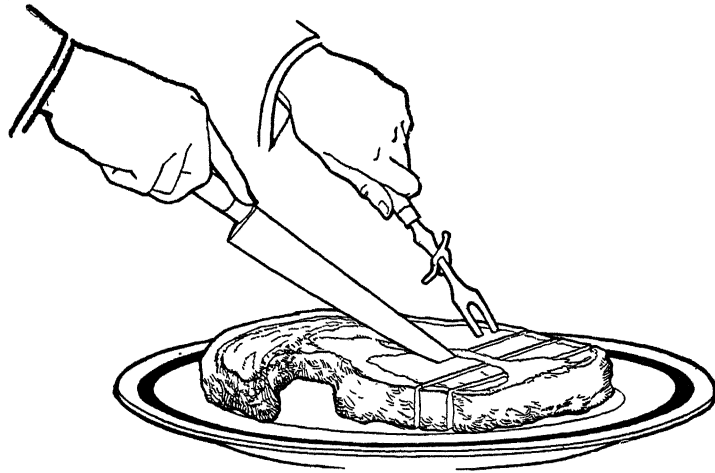


Fig. 41.—Correct method of carving a steak.

Tenderloin of Beef.—Tenderloin or fillet of beef is also easily carved. The fibers run lengthwise and in order to cut across the fibers it is only necessary to cut slices from the end of the roast as in Fig. 45.

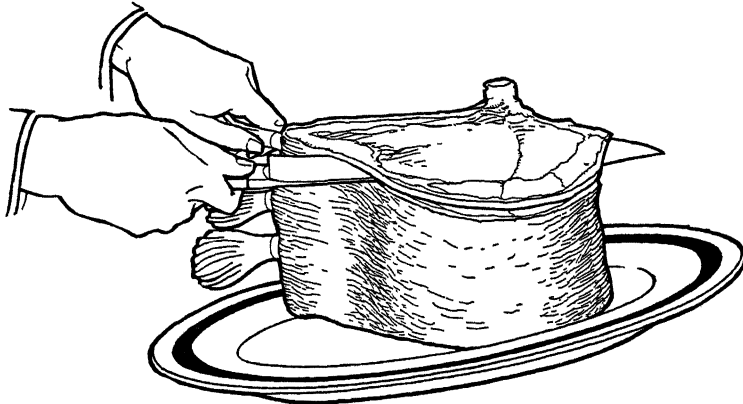


Fig. 42.—A standing rib roast is carved in this manner.

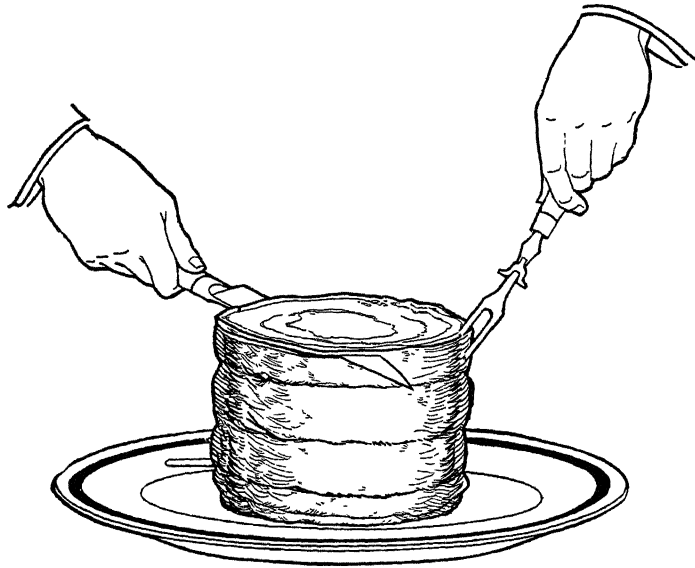


Fig. 43.—A rolled roast is carved in thin, horizontal slices.

Standing Rib Roast.—The standing rib roast is one of the more difficult cuts to carve. The roast is so placed on the platter that slices may be carved toward the rib bones. It is usually more convenient to have the meaty side of the roast wholly or partially toward the center of the table or toward the right end of the platter. The fork is placed firmly in the left side to hold the roast firmly in place, or if the ends of the ribs protrude from the roast and are covered

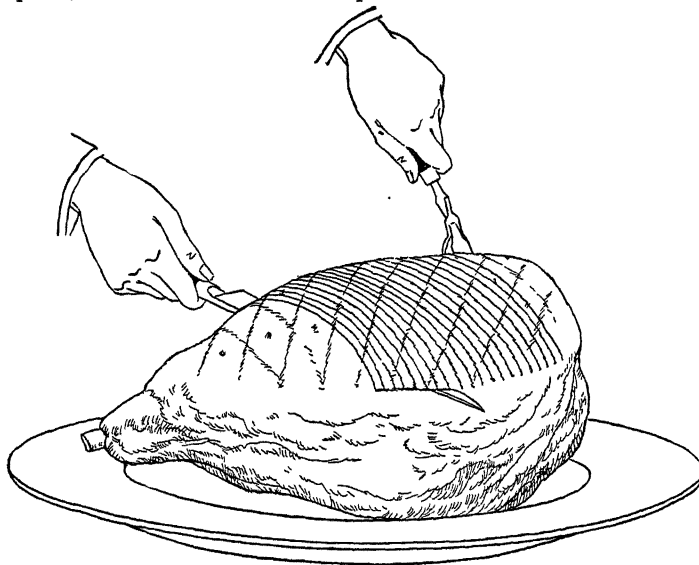


Fig. 44.—Method of carving ham.

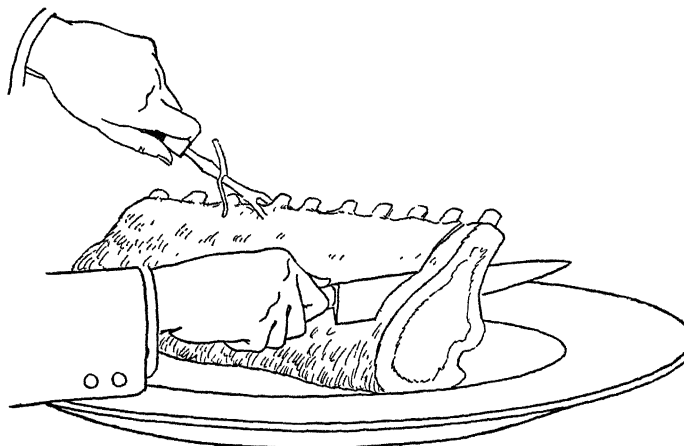


Fig. 45.—The way to carve a loin roast of pork, veal, or lamb.

with paper frills the carver may hold the end of a rib with the left hand. Thin slices of the meat are carved with the movement of the knife toward the ribs. After several slices are carved the knife is inserted so that the point may follow the backbone and rib bones to separate the meat from the bones (see Fig. 42).

Rolled Rib Roast.—In a rolled roast the fibers run up and down. To cut across the grain, slices are removed from the top of the roast as in Fig 43.

Pot Roasts.—Find the grain of the meat. In so far as possible, cut slices across the grain. Some cuts used for pot roasts may have fibers running in sev-



Fig. 46.—In carving a crown roast of pork or lamb, cut chops of equal thickness.

eral directions, in which case it is difficult or impossible to carve across the fibers. It is usually possible to cut at least partially across the fibers.

CARVING PORK

Ham.—Place the fork firmly in the meat, cut straight downward toward the bone until enough slices have been carved. Then with the knife blade in the last opening at the right, bring the blade under the slices and cut toward the left to sever slices from the bone. Lift slices out and arrange on the platter ready for serving (see Fig. 44).

In carving boned ham, slices are removed from the end as in the method for carving tenderloin of beef. If only part of a boned ham has been cooked it may be more convenient to place it on the platter with fibers running up and down as in rolled roast of beef. Under such circumstances it is carved as rolled roast beef is carved.

Loin Roast.—In carving the rib end of the loin roast a serving consists of a slice including a rib bone (see Fig. 45). (The butcher usually chops or saws divisions in the backbone which aids in the separation of slices.) The loin end of the pork loin has no rib bones, but slices of about $\frac{1}{2}$ - or $\frac{5}{8}$ -inch thickness are carved as servings.

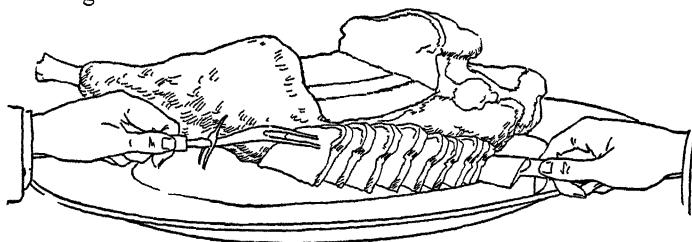


Fig. 47.—Carving a leg of lamb.

CARVING VEAL

Leg.—Leg of veal is carved as described under ham. If the leg has been boned and stuffed slices of meat and dressing are removed from the end of the roast.

Loin.—If the loin is used as a roast it is carved as pork loin (see Fig. 45). If it has been boned and rolled, slices are removed from the end of the roast.

Breast.—Wide slices are cut across the fiber which runs lengthwise of the breast. This cut usually has a pocket filled with dressing, in which case a serving will have an under and upper layer of meat with dressing in the center.

CARVING LAMB

Crown Roast.—A rib chop is carved as a serving. Because of the rounded shape of the roast, it is usually best to make a wedge-shaped cut. The string which holds the two rib sections together must be removed during the carving process (see Fig. 46).

Leg.—Place leg on platter with rounded side up. Cut straight down toward the bone as in carving ham. By running knife under slices they may be separated from the bone (see Fig. 47).