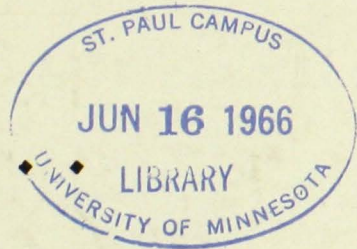


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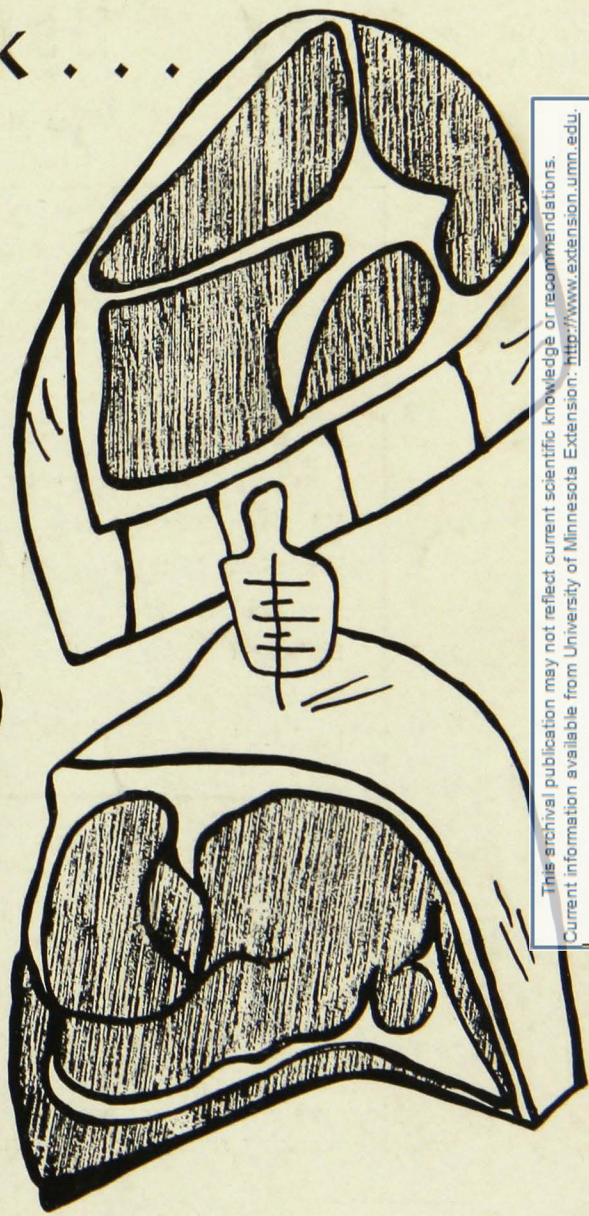
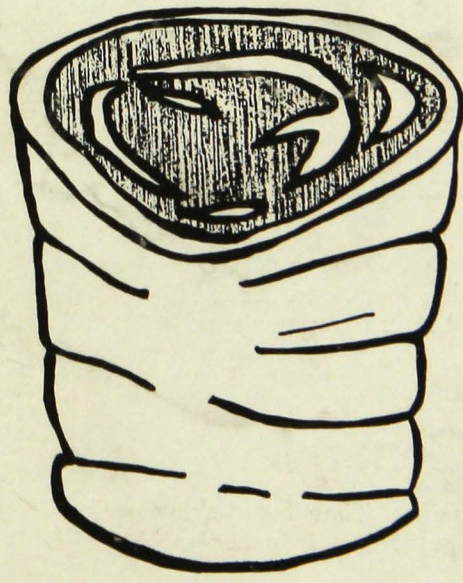


# How to Choose . . .

# How to Cook . . .

# BEEF

VERNA MIKESH



This archival publication may not reflect current scientific knowledge or recommendations.  
Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>.

2

# How To Choose How To Cook BEEF

Verna Mikesh\*

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Beef, with its appetizing flavor and aroma, is the popular entrée of many meals. Well cooked beef is tender, juicy, and attractive in color. Careful beef selection and cooking will insure you maximum eating enjoyment for your meat dollar.

## Meat In General

Meat preferences vary among families. Time for cooking, money available, cooking skills, and knowledge of cuts influence the kind of

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\* Verna Mikesh is an associate professor and extension nutritionist.

meat that appears on a family's table. Young families consume large quantities of ground beef because of its economy and popularity with the young set. Small families or single persons usually prefer steaks and chops to larger cuts. Many men have become interested in meat with the coming of the barbecue grill.

Regardless of individual tastes, two servings of protein-rich food per day are recommended for optimum nutrition. These servings may be meat, poultry, fish, or eggs, with dried beans, peas, and nuts as alternates. Two or 3 ounces of lean cooked meat without bone may be counted as one serving.

People spend different amounts of money for meat. Generally speaking, you pay for meat tenderness. But the homemaker who devotes a little extra time and skill to the preparation of less tender cuts can feed her family well, save money, and still be able to provide tender good tasting meats.

## Nutritive Value

Meat furnishes high quality proteins for growth and maintenance of tissues. It provides iron for building and replacing blood cells and B vitamins for maintenance of all-round good health. Its calorie content varies with the amount of fat. An average 3-ounce serving contains about 250 calories.

## What Is Meat?

A knowledge of meat structure will help you select and cook good meat. Meat is made up of millions of fibers held together with connective tissue. Each fiber is like a tiny tube filled with water, proteins, minerals, vitamins, flavoring materials, and coloring matter. Small bundles of muscle fibers held together with connective tissue form large bundles called muscles.

Connective tissue holds muscles and muscle fibers together. Exercise and age tend to change the character of connective tissue making it less tender. The amount and character of the connective tissue in meat affect the cooking method.

There are two kinds of connective tissue—white, sometimes called collagen, and yellow, sometimes called elastin. Collagen softens in the presence of gentle heat and moisture to form gelatin. You can observe softened collagen in cooked beef shank cross cuts.

Yellow connective tissue that stretches is not affected by ordinary cooking methods. An example is the tough glistening band in neck and shoulder cuts.

Fat between and around muscles and muscle fibers is associated with tenderness. It is thought that white connective tissue, stretched thin by the accumulation of fat, is easily broken by chewing. In addition, fat protects meat from drying out during cooking.

# Judging Beef Quality

To be a wise buyer, you should know these facts about beef quality.

## Inspection

Meat shipped across state lines must be federally inspected for wholesomeness. A round purple stamp on the meat indicates that it was inspected and passed as wholesome food. Meat processing plants and facilities must also pass sanitary inspections. Meat that does not move across state lines may or may not be subject to Federal inspection.

## Grading

Meat may be sold graded or ungraded depending upon the wishes of the processor. If it is graded, the processor may use Federal or private descriptions. Both types are determined on the basis of marbling, muscling, fat cover, color, and meat texture. Grades are a fairly good indicator of tenderness, flavor, and meat appearance.

Present Federal grades and their characteristics are:

**USDA Prime**—Highly marbled, very tender, considerable outside fat. Rarely found on the retail market.

**USDA Choice**—Moderately marbled, tender. Outside fat may be moderate to excessive. About 50 percent of the meat on U.S. markets is choice grade.

**USDA Good**—Some marbling, tenderness variable, outside fat variable.

**USDA Standard**—Little or no marbling. Tenderness variable, little outside fat.

**USDA Commercial**—Generally lacks tenderness due to maturity. Outside fat variable.

**USDA Utility**—Little fat, lacks tenderness. Most of this grade is used in processed meat products.

Quality variation exists within a particular grade as well as between grades. For example, a carcass on the low end of the USDA Choice grade may be considerably leaner than one on the top end. In an economic sense, you pay for tenderness.

## General Quality Guides

If the meat is not graded, evaluate it on the following points:

**Red porous bones.** Cartilage on the tips of ribs and on the blade bone is an indication of a young animal. White flinty bones indicate age.

**High proportion of lean to bone and fat.**

**Bright red color.** As beef becomes older the meat becomes darker.

**Fine firm texture.** The meat should look velvety.

**Marbling.** This is necessary for tender, juicy meat. Meat with little marbling is often dry, though skillful cooking can make it delicious.

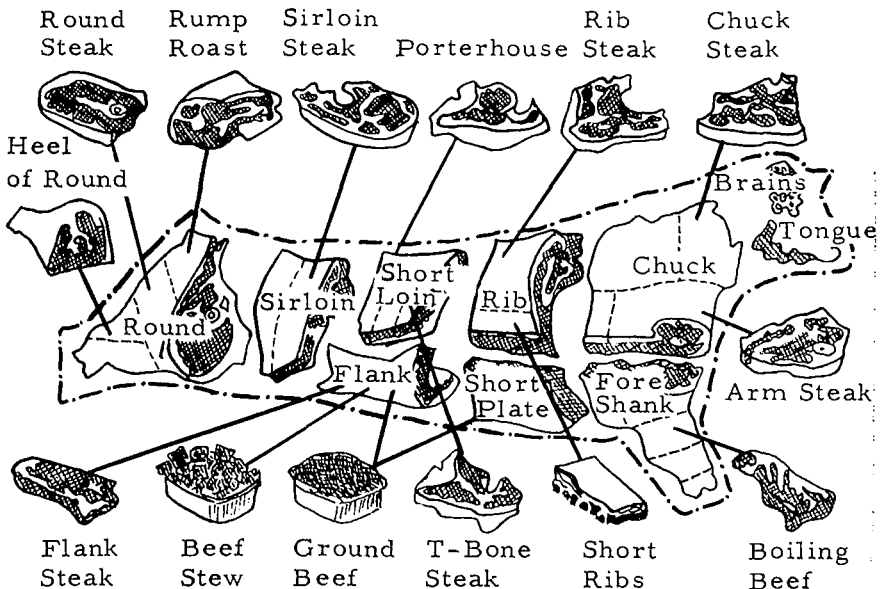
## Hints On Beef Selection

A knowledge of the characteristics of beef cuts will help you select the meat you want. The cuts along the back (rib, short loin, and sirloin) are the tenderest, as the animal exercises these parts the least. There are variations in the tenderness of the muscles of the round and chuck but most of them are not very tender because the animal exercises these parts. Cuts from the flank and shank are least tender because of the muscle structure and large amounts of connective tissue.

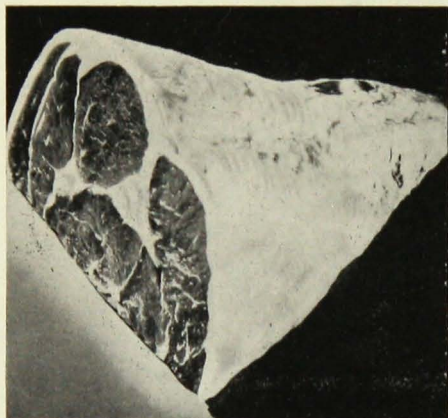
The chart below, reproduced from a drawing in the *Modern Meat Cookbook* by Jeanette Frank, shows the location of cuts from a beef side.

The retailer prepares saleable portions from wholesale cuts. Today's trend is toward small cuts, closely trimmed, often boneless, individually packaged, and labeled as to cut, grade, and cost per pound. Labeling is valuable to the purchaser as the traditional identification marks of bone and shape may no longer be present.

Choice of a cut depends upon the number of people to be served, cooking method, equipment, recipe, and cost. In the following illustrations, numbers 1-10 come from the hind quarter and numbers 11-20 from the front quarter. The cuts and their descriptions are arranged across from each other. Ground beef and stew meat come from trimmings or less popular cuts.



## Cuts From The Hind Quarter

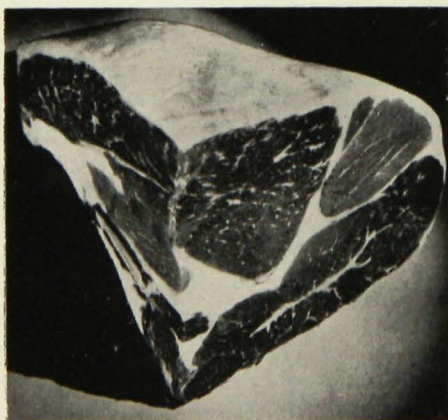
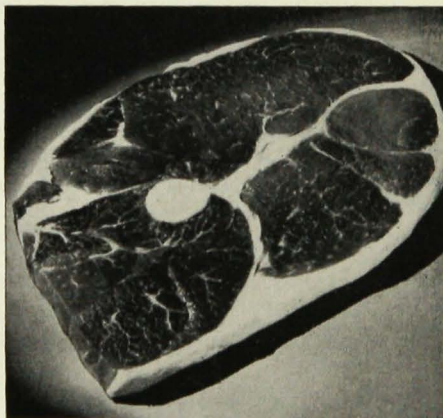


### 1. Heel Of Round Pot Roast

Identified by the somewhat cone shape and fat covering on the outside, this cut comes from the lower extremity of the round. It has a number of small muscles visible on the cut surface. When rolled and tied it may be retailed as the Pike's Peak. It is suitable for braising. The retail weight of this cut is usually 2 to 5 pounds.

### 2. Round Steak

Identified by the oval shape and small round bone. The large clearly defined muscles of this cut may be seamed apart and sold separately. The large long muscle called the inside or top round is moderately tender. The smaller muscles below it are called the bottom round and are less tender. Any part of the round steak may be cut thick and retailed as Swiss steak.

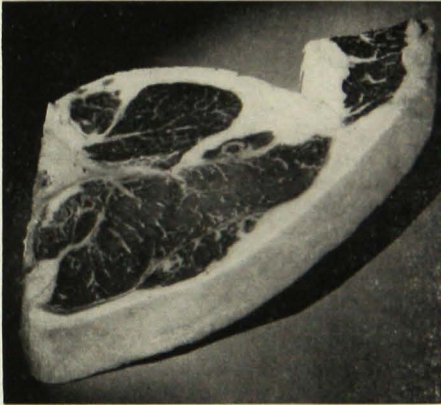
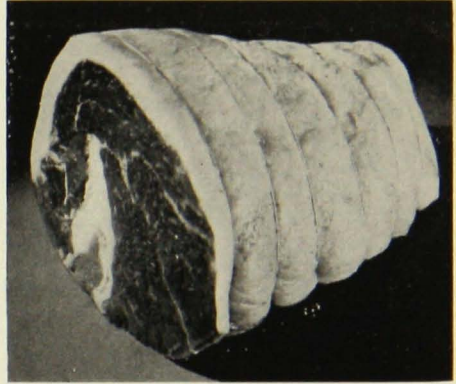


### 3. Standing Rump Roast

This irregularly shaped cut contains a large flat bone shaped like a spoon. A full standing rump roast may weigh up to 12 pounds, but is usually cut into several smaller roasts or boned, rolled, and tied. Rump is best braised except in Choice grade when it may be oven roasted.

#### 4. Boneless Rump Roast

This is actually the same cut as round steak, but it has been boned, rolled, and tied to conserve freezer space and to make carving easy. A full boneless rump roast weighing 6 to 9 pounds may be cut into two or three smaller roasts.

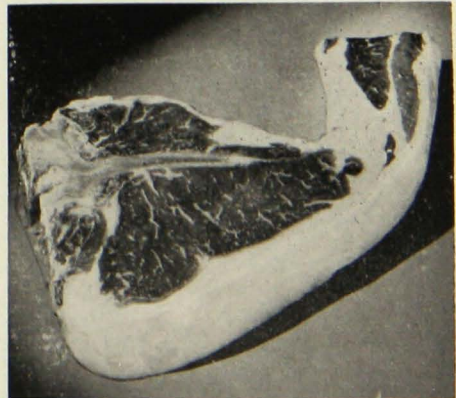


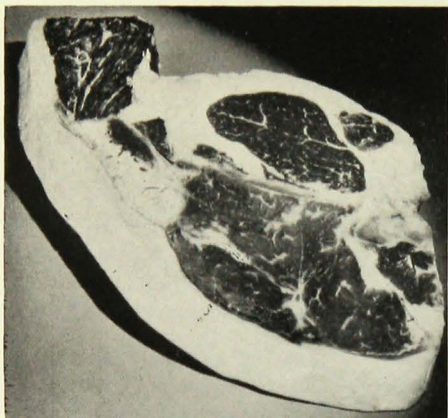
#### 5. Porterhouse Steak

Identified by three distinct muscles—the tail or flank, tenderloin, and large eye muscle. The large tenderloin is below the projection of the backbone. These steaks should be cut from 1 to 2 inches thick for broiling.

#### 6. T-Bone Steak

The T-bone differs from the Porterhouse in that all three muscles are smaller. The tail and tenderloin diminish in size as steaks are cut toward the ribs. T-bones are most desirable for broiling when cut from 1 to 2 inches thick.



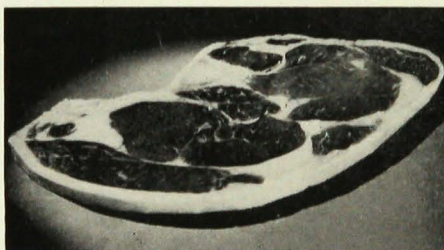


### 7. Sirloin Steak (Pin And Flat Bone)

Pin bone and flat bone sirloins are characterized by the large muscles at the top. They have three distinct sections of muscling as seen in the illustration. The pin and flat bone sirloins are considered the most desirable of the sirloin steaks.

### 8. Sirloin Steak (Wedge And Round Bone)

Wedge and round bone sirloins can be recognized by the large muscle cut with the grain. They are most desirable for broiling when cut 1 to 2 inches thick.

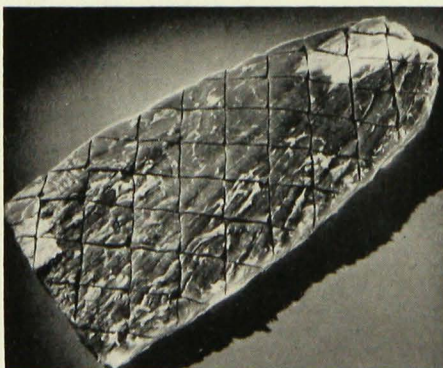


### 9. Club Steak

Identified by little if any tenderloin and absence of the tail. The large eye muscle is tender and juicy, making this a fine small steak for broiling. It should be cut from 1 to 2 inches thick.

### 10. Flank Steak

Only two flank steaks are found in a beef animal. The fibers run the entire length of the long, flat muscle. When retailed whole, the surface may be scored. The flank steak lacks tenderness so it is best prepared by braising. Each weighs about 1 pound.

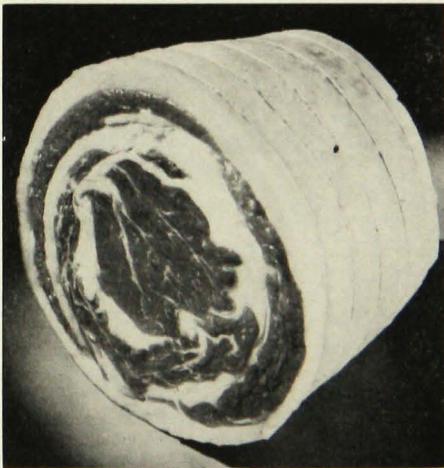




## Cuts From The Front Quarter

### 11. Standing Rib Roast

The standing rib roast includes the 6th through 12th ribs and is characterized by the large eye muscle seen at both ends. It has a good outside covering of fat and a bony surface composed of ribs and backbones that have been split. Rib roasts should weigh at least 3 pounds to make satisfactory oven roasts. The entire cut may weigh up to 18 pounds.



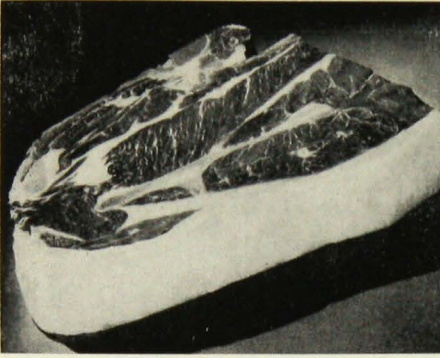
### 12. Rolled Rib Roast

To make carving easy and to conserve freezer space, the standing rib roast is boned, rolled, and tied as illustrated. This cut should be oven roasted on a rack.

### 13. Rib Steak

This is the standing rib roast cut into steaks. Note the rib bone and large eye muscle. Part of the backbone has been removed. Rib steaks are most desirable for broiling when cut 1 to 2 inches thick.



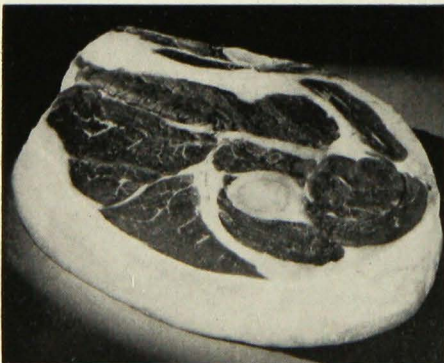
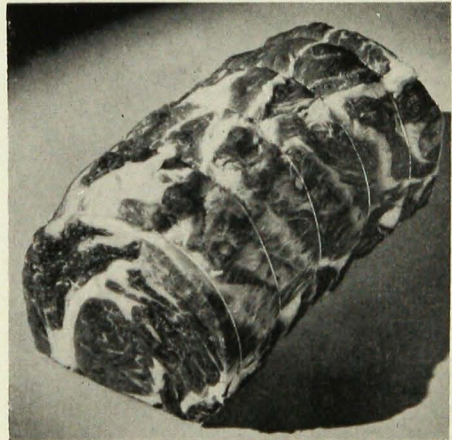


#### 14. Blade Pot Roast

A good percentage of the meat in the front quarter is called the chuck. This is cut into pot roasts. A blade pot roast can be identified by the narrow blade bone, rib, and neck bones. Chuck or blade pot roasts should be cut at least 2 inches thick for braising. Thinner slices are called blade steaks. Pot roasts may weigh from 2 to 5 pounds.

#### 15. Inside Chuck Pot Roast

The entire beef chuck may be boned and divided into inside and outside chuck. The inside chuck does not have a natural outside fat covering and appears as illustrated. The outside chuck has its own fat covering. Both make excellent, easily carved pot roasts.

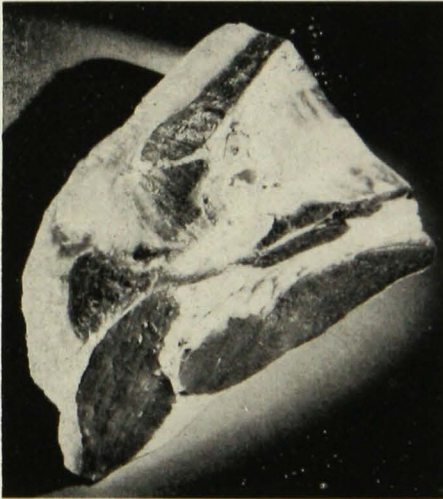
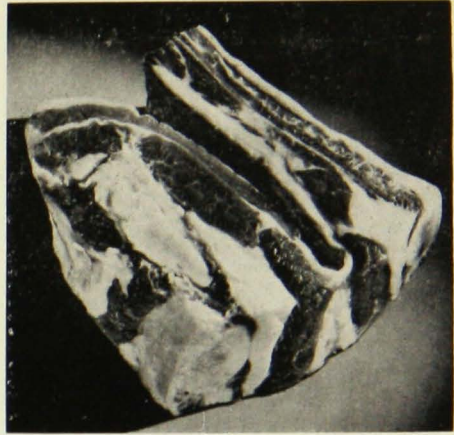


#### 16. Arm Pot Roast

Identified by the large number of small irregular shaped muscles and rib ends that can be seen along the edge. The round bone is located next to a round muscle near the outside edge. Has a thick layer of seam fat between rib bones and arm muscle. Arm pot roasts should be braised.

### 17. Plate Beef

Cut from the underside of the carcass, plate beef contains ribs, rib cartilage, and alternate layers of lean and fat tissue. Labeled "boiling beef," the plate serves as a foundation for soups or stews. It is generally boned and sold as ground beef.

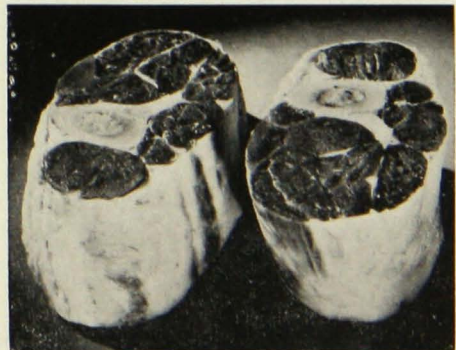


### 18. Brisket

The brisket is often retailed as corned beef, although it may be sold fresh as boiling beef. Cuts of boned corned brisket may weigh from 1 to 7 pounds.

### 19. Shank Cross Cuts

These are cut from the leg and are characterized by small round muscles and a large shank bone. They make excellent soup stock and may also be braised.





## 20. Beef Short Ribs

These can be ends of the standing rib roast or ribs from the beef plate. They appear as cubes with alternate layers of fat and lean with the rib on one side. Ribs from low grade carcasses are more desirable as they do not contain excess fat. Short ribs can be braised or used for soup.

# When You Buy Meat

Knowing the number of servings per pound can help you estimate the amount of meat to purchase or allow. The guide below may also help you decide whether or not certain cuts are good buys.

### Serving allowances for beef

Meat characteristics	Serving per person
Much bone and connective tissue .....	$\frac{1}{2}$ to 1 lb.
Medium amounts of bone and connective tissue .....	$\frac{1}{3}$ to $\frac{1}{2}$ lb.
Little bone .....	$\frac{1}{4}$ to $\frac{1}{3}$ lb.
No bone .....	$\frac{1}{5}$ to $\frac{1}{4}$ lb.

Good storage conditions help retain meat quality. Remove wrapping from meat to allow air circulation. Store fresh meats, covered loosely with wax paper, in the coldest part of the refrigerator. Slight drying out helps preserve meat. Plan to use fresh beef in 3 or 4 days. Hamburger and variety meats should be used within 24 hours. Meat to be kept longer than designated periods should be wrapped in good quality freezer paper or foil and stored in the freezer.

# Tenderizing Methods

## Aging

Most beef reaches the market about 2 weeks after slaughter. During this time, it has been aged or ripened under carefully controlled conditions. Ripening or aging is a process whereby certain substances within the meat are activated, producing a tenderizing effect.

## Mechanical

Cuts with considerable connective tissue—round, flank, or chuck steaks for example—may be tenderized by mechanical methods such as

cubing, pounding, or grinding. Any cut can be made tasty and tender by grinding it with a fine blade.

### **Marinades, Acids**

Marinating meat in weak acid for a few hours or 2 or 3 days can have a tenderizing effect. Cooking meat in acids such as tomatoes or sour cream can tenderize it somewhat. These processes add to the flavor associated with tenderness.

### **Enzymes**

Powders and liquid dips containing enzymes such as papain and bromelain tenderize meat by softening connective tissue. Follow package directions.

A process has been developed for introducing an enzyme tenderizer into an animal before slaughter. The animal's circulatory system distributes the tenderizing agent uniformly throughout the meat.

The use of meat tenderizers is not harmful, as the enzyme is destroyed through heating and digestion. Tenderized meat requires a shorter cooking time than untenderized meat.

## **Beef Cookery**

Meat is cooked to bring out the flavor, to make it look appetizing, and, in some cases, to tenderize it. The action of heat upon muscle fibers and fats produces a pleasing aroma. Much of the flavor of meat is in the juices.

Heat causes the coagulation of protein, resulting in a firming up of the meat. Some of the water evaporates and muscle fibers shrink. The fat cooks out to some extent, and the color changes from red to brown or gray. White connective tissue softens in the presence of moisture.

Tender cuts are at their best when cooked in dry heat. There is enough moisture in the meat itself to soften the relatively small amount of connective tissue. Overcooking results in dry meat. Less tender cuts with more connective tissue (collagen) require more time and additional moisture to become tender. They become dry and stringy when overcooked, as the softened collagen washes away from the fibers.

The art of beef cookery lies in acquiring flavor and tenderness without overcooking and shrinking the meat. Shrinkage is caused by loss of fat and moisture. Since beef contains proteins, it is important to cook it at low to moderate temperatures. High heat tends to harden and toughen protein.

## **Basic Beef Cookery Methods**

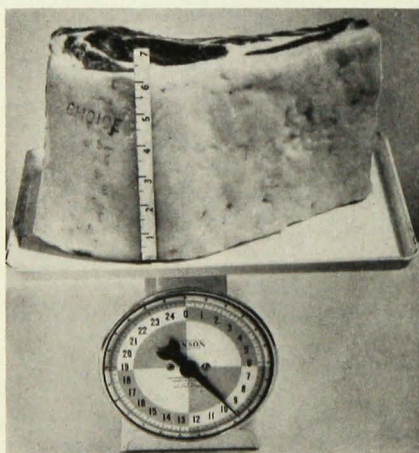
The two basic methods are: Dry heat for tender cuts—oven roasting, broiling, panbroiling, and panfrying; moist heat for less tender cuts—braising, stewing, and simmering in water.

# Cooking Beef By Dry Heat

## Beef roasting timetable

Degree of doneness	Meat thermometer reading	Approximate minutes per pound
Rare .....	140° F.	20
Medium .....	160° F.	25
Well done .....	170° F.	30

The advantages of using low temperature in meat cookery are shown in the following illustrations.



### Left:

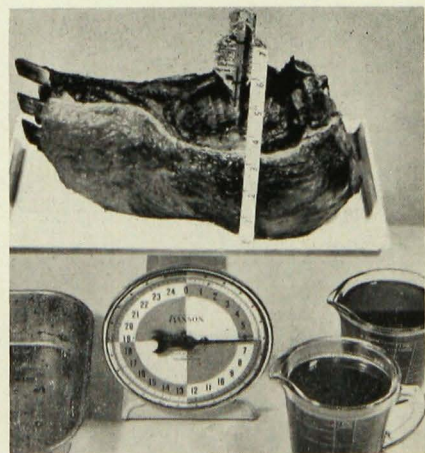
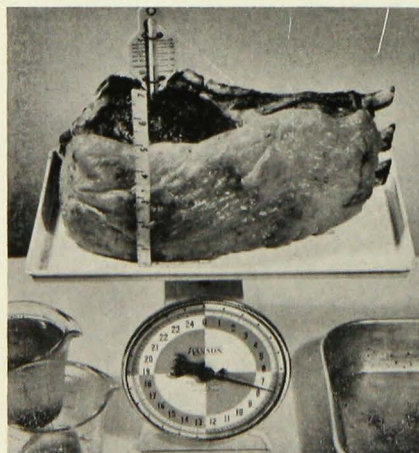
A standing rib roast weighing 9 pounds, 10 ounces, before cooking.

### Left below:

Same cut properly roasted at 300° F. for 4 hours and 49 minutes. Weight after cooking—7 pounds, 8 ounces. Normal shrinkage of 2 pounds, 2 ounces.

### Right below:

Similar cut after roasting at 450° F. for 2 hours and 32 minutes. Weight after cooking—6 pounds, 2 ounces. Shrinkage of 3 pounds, 8 ounces, due to fat and moisture loss.



## Oven Roasting

(You will need a shallow pan, rack, and meat thermometer.)

1. Place meat fat side up on a rack in an open roasting pan.
2. Insert meat thermometer in center of the thickest part. Do not allow thermometer to touch bone.
3. Do not add water, do not cover, do not baste.
4. Roast at a constant slow oven—300° to 325°F.
5. Roast to desired degree of doneness.
6. Salt after slicing.

## Cuts to Roast

Ribs—standing or rolled rib roast

Rump—Choice grade

Meat loaf

## Broiling

1. Set oven regulator at broil.
2. Slash fat edge to prevent curling.
3. Broiler may or may not be preheated; follow instruction book for your range.
4. Grease rack with a bit of fat to prevent sticking.
5. Place meat 3 to 6 inches from heat depending on thickness. The thicker the steak, the farther from the heat.

6. Broil one side until brown.
7. Turn once.
8. Salt after browning.

For best results, steaks should be at least 1 inch thick. Cut a slit near the bone or steak center to test for doneness.

## Cuts To Broil

Club, T-bone, porterhouse, sirloin, and rib steaks

Ground beef patties

## Panbroiling

1. Slash fat edge to prevent curling.
2. Place meat in a heavy preheated frying pan.
3. Grease pan just enough to prevent sticking.
4. Brown meat on one side and turn.
5. Pour off fat as it accumulates.
6. Season after browning.

## Cuts To Panbroil

Same as for oven broiling.

## Panfrying

Generally, beef is not fried. Exceptions are: chip, minute, and cube steaks browned quickly in a little butter.

# Cooking Beef By Moist Heat

## Braising

1. Brown meat on all sides in hot fat in a heavy utensil.

2. Dredge with flour before or after browning as desired.
3. Season.

4. Add a small amount of liquid (water, vegetable juice, soup, etc.).
5. Cover tightly and cook slowly either on top of range or in a 300° F. oven until fork tender. A 4 or 5 pound pot roast takes about 3 hours.
7. Thicken gravy with a little flour mixed with water if desired.

### Cuts To Stew

Neck, shank, heel of round  
Plate  
Heart

### Cuts To Braise

Arm or blade pot roast from shoulder, sometimes called chuck

Swiss steaks from round

Heel of round

Rump, heart, liver

### Cooking In Liquid—Stews

1. Cut meat into 1- to 2-inch cubes.
2. Brown meat in a little hot fat in a heavy utensil (optional).
3. Add seasoning.
4. Barely cover with liquid (water, vegetable juice, soup, etc.).
5. Simmer until fork tender.
6. Add vegetables just long enough before serving to be cooked.

### Cooking In Liquid—

#### Large Cuts

1. Brown meat if desired.
2. Cover with liquid, season.
3. Simmer until tender, do not boil.
4. Cool meat rapidly in liquid.
5. If vegetables are used, add them long enough before serving to cook them tender.
6. Liquid may be thickened with a flour and water paste if desired.

### Cuts To Simmer

Neck, shank, plate, brisket  
Short ribs  
Corned beef  
Tongue  
Soupbones

## Seasonings For Beef

Although beef has its own distinctive flavor, many people enjoy seasoning it in a variety of ways. Roasts and broiled steaks do not need seasoning outside of salt and pepper. Salt them after cooking.

Seasonings for ground meat dishes, pot roasts, stews, and Swiss steaks offer many challenges to the imaginative cook. Spices and herbs used with beef are: whole allspice, basil, bay leaves, chili powder, garlic, ginger, marjoram, parsley, thyme, onion, and garlic salt. Seasonings are often combined.



Use of different liquids also makes for many flavor combinations. Water can be used, but tomato and vegetable juices, vinegar, lemon juice, canned soups, and cream offer interesting variations.

Vegetables add flavor as well as texture and color. Tomatoes, mushrooms, green peppers, onions, celery, and carrots are good. Potatoes, carrots, and onions are often used in pot roasts and stews.

Beef flavor is enhanced with sauces such as catsup, chili, Worcestershire, mustard, and horseradish.

## Beef Recipes

### Pickled birds

1 beef round steak, cut $\frac{1}{2}$ " thick	$\frac{1}{4}$ cup water
1 teaspoon salt	$\frac{1}{4}$ cup dill pickle liquid
$\frac{1}{4}$ cup flour	1 bay leaf
3 slices bacon cut in half	2 tablespoons flour
3 medium dill pickles cut in half lengthwise	1 cup dairy sour cream
2 tablespoons fat	1 tablespoon chopped parsley

Combine salt and flour and pound into steak. Cut into six pieces. Place bacon slice and pickle on meat and roll. Secure with toothpicks. Brown rolls in hot fat. Pour off drippings, add liquid and bay leaf. Cover and cook slowly  $1\frac{1}{2}$  to 2 hours. Remove meat. Thicken gravy. Add sour cream and parsley. Heat but do not boil. Six servings.

### Liver and sausage casserole

1 lb. pork sausage links or patties	1 onion, chopped
1 lb. beef liver	2 tablespoons flour for thickening
1 teaspoon salt	1 cup water
$\frac{1}{8}$ teaspoon pepper	

Brown pork sausage. Place in a baking dish. Fry onions till golden. Add to sausage. Cut liver in strips, dust with flour, and brown in fat. Add to other ingredients and stir to distribute. Pour off all but 2 tablespoons of fat. Blend in flour and add water. Cook until thickened and pour over meat. Cover and bake in a  $350^{\circ}\text{F}$ . oven for 30 minutes.

For easier handling, freeze liver before slicing. Eight servings.

### Beef stew

2 lbs. lean beef, cubed	$\frac{1}{4}$ teaspoon thyme
$\frac{1}{4}$ cup flour	$\frac{1}{2}$ lb. green beans (fresh, frozen, or canned)
$1\frac{1}{2}$ teaspoons salt	1 head cauliflower separated into flowerettes
$\frac{1}{4}$ teaspoon pepper	
2 onions, chopped	
1 bay leaf	

Brown floured beef cubes in a little fat. Add onion and seasoning and enough water to barely cover the meat. Simmer for 2 to 3 hours or until barely tender. Add vegetables and finish cooking. Thicken if necessary. Carrots and potatoes or any other combination of vegetables can be used. Eight servings.

### Meatza pie

1 lb. ground beef	$\frac{1}{3}$ cup catsup
$\frac{1}{2}$ teaspoon garlic salt	2 or 3 slices processed American cheese cut in strips
$\frac{1}{4}$ cup fine bread crumbs	$\frac{1}{4}$ teaspoon oregano
$\frac{1}{2}$ can mushroom soup	2 tablespoons grated Parmesan cheese

Put beef, garlic salt, crumbs, and mushroom soup into a 9" pie pan. Mix together and spread evenly in pan. Spread catsup over top, place cheese strips in a criss cross pattern over top. Sprinkle with oregano and Parmesan cheese. Bake at 400°F. for 20 minutes. Four to six servings.

### Acknowledgement

The author wishes to thank the following source for illustrations of beef used in this bulletin:

NATIONAL LIVESTOCK AND MEAT BOARD  
407 South Dearborn Street  
Chicago, Illinois

**Food For Fitness**

**A Daily Food Guide**

**Milk Group**

Some milk for everyone

Children under 9 - 2 to 3 cups  
9 to 12 - 3 or more cups  
Adults - - - 2 or more cups  
Teenagers - - 4 or more cups



**Meat Group**

2 or more servings

Beef, veal, pork, lamb,  
poultry, fish, eggs

As alternates—  
dry beans, dry peas, nuts

**Vegetable  
Fruit Group**

4 or more servings

**Include—**

A citrus fruit or other fruit  
or vegetable important for  
vitamin C

A dark-green or deep-yellow  
vegetable for vitamin A—  
at least every other day

Other vegetables and fruits,  
including potatoes

**Bread  
Cereal Group**

4 or more servings

Whole grain, enriched, or restored

Plus other foods as needed to complete  
meals and to provide additional food  
energy and other food values

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...therance of cooperative extension work in agriculture and home economics, acts of  
...ne 30, 1914, in cooperation with the U. S. Department of Agriculture. Luther J.  
...of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota

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