Beef for the Table

HOW TO SELECT IT
HOW TO USE IT

by

Sleeter Bull
R. J. Webb
R. C. Ashby

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# CONTENTS

**Flavor and Tenderness: Four General Indexes** ........................................... 4  
Age and Sex ................................................................................. 4  
Conformation ............................................................................... 5  
Finish ......................................................................................... 5  
Quality ......................................................................................... 8  

**Government Grades Are Consumer’s Best Guide** ................................. 14  
U. S. Prime .................................................................................. 15  
U. S. Choice ................................................................................ 15  
U. S. Good .................................................................................. 17  
U. S. Commercial ......................................................................... 17  
U. S. Utility ................................................................................. 17  
U. S. Cutter and Canner ................................................................. 18  

**O. P. A. Grades and Packer Brands** ....................................................... 18  

**Prices Vary With Grade and Kind of Cut** ............................................. 19  

**Basic Principles of Good Beef Cookery** ................................................ 20  

**Location of Primal Cuts** .................................................................... 23  

**Retail Cuts: Location, Use, and How to Cook** ...................................... 24  
Steaks ......................................................................................... 25  
Roasts ......................................................................................... 34  
Pot Roasts ................................................................................... 37  
Stew Meat .................................................................................... 40  
Variety Meats ................................................................................ 41  

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**BEEF FOR THE TABLE**

By Sleetor Bull, R. J. Webb, and R. C. Ashby

One of the most difficult shopping problems for the housewife, and often for her husband, is to buy satisfactory beef at a price within the family's income and the coupons in its ration book. Most of the difficulty comes from the fact that differences in quality are not always easy to recognize when the meat is seen on the butcher's block or in his showcase. But it is also due to lack of familiarity with the beef carcass, the characteristics of the cuts from the different parts of the carcass, their relative costliness in terms of price and ration points and nutritive value, and the way each must be cooked to make it most palatable. The Office of Price Administration quotes ceiling prices on 37 cuts of beef, not to mention ox tail, liver, heart, brains, and other organs and glands, often called "variety" meats.

The different grades of beef all have their place in the beef trade. A few consumers want and can afford to buy the best; some can afford only the lower grades; most people buy the intermediate grades, hoping to get satisfactory flavor and tenderness at medium cost. The most tender and best-flavored beef, however, which is the most expensive, has no higher nutritive value than the lower grades (except for some of the glands and organs); and nearly every cut, regardless of its grade and cost, has its use in the diet if properly cooked.

One of the best indexes to excellence, or desirability, or goodness, or palatability, and the way a given cut should be cooked is price. The tender cuts, which are more expensive, can be broiled or roasted. Others need to be pot-roasted or stewed. A tough cut can often be made tender and flavorsome with the right cooking, and a good piece of beef can easily be ruined by poor cooking.

The purpose of this circular is to give inexperienced buyers the information they need in order to get the kind of beef they want and can pay for, both in dollars and ration points, and to guide them in preparing it in the best way for the table.
Flavor and tenderness: four general indexes

Beef carcasses and cuts are assigned to classes and grades indicating their probable palatability (flavor and tenderness). Classes refer to the sex and age of the carcass. Grades refer to the shape or “build” of the carcass or cut (known as conformation), the amount and distribution of fat (known as finish), and the color, texture, and firmness of lean, fat, and bone (known as quality).

The best beef usually comes from animals that have been bred for generations for meat production, not from dairy cattle or cattle which, like Topsy, “just grewed.” Beef from yearlings or from two-year-old cattle is usually superior to beef from old cattle; and beef from well-fed cattle is usually superior to beef from poorly nourished cattle.

Age and Sex

Since the age and usually the sex of a meat animal have a very definite effect on its carcass, the meat trade long ago adopted the five classes of beef described below. These classes are worth knowing since they help one to understand why the same cuts from different carcasses vary in palatability and in price.

Steers. Males that are castrated in calfhood in order to produce more rapid gains and to improve their meat are known as steers.

Heifers. These are young females which have never borne a calf. Steer and heifer beef are usually similar in palatability and both are distinctly superior to cow, bull, and stag beef of the same grade.

Cows. Females which have borne one or more calves are known as cows. Since cows are usually kept by stockmen as long as they produce calves and milk, most cows sold for beef are advanced in age and many are of dairy breeding.

Bulls and stags. Bulls are males that have not been castrated, and stags are males castrated after they reached sexual maturity. Both are usually adult. Generally speaking, they are inferior to cows in flavor and tenderness. Under O. P. A. regulations all bull and stag carcasses must be so stamped on each wholesale cut, along with the grade (see pages 14 to 18). Since bulls and stags are not used extensively in the retail trade except as ground beef for hamburger, bologna, sausages, etc., they will not be discussed any further.

Conformation

Carcasses of good conformation come from beef-bred cattle, types of cattle which have been selected for many generations for their ability to produce satisfactory beef while those of poor conformation come from cattle of dairy breeding, which have been selected for milk production and from scrub cattle which have had little or no artificial selection.

Ideal conformation consists of good width in proportion to length, short shanks and necks, and full thick rounds, loins, ribs, and chucks. There is more meat and less bone in cuts from carcasses of good conformation.

To the retailer conformation is important because proper form insures a high percentage of the high-priced cuts.

Finish

Finish refers to the amount and distribution of fat thru the carcass. Perfect finish requires a smooth, even covering of fat \( \frac{1}{4} \) to \( \frac{1}{2} \) inch thick over the outside of the carcass or cut (this is called external fat), and an abundance of fat in the fine connective tissue binding the muscle cells together (called marbling).

Finish is of great importance in beef or any other meat. A consumer who is interested mainly in economy and nutritive value wants lean meat because it is usually cheaper and more completely eaten than fat meat. One who is interested mainly in flavor and tenderness buys fat beef. The reasons for this are more evident if one understands the structure of meat.

The voluntary muscles (Fig. 1), which comprize most of our meat cuts, are composed of many thousands of muscle fibers, or cells, bound together by a fine network of connective tissue and surrounded by a sheath of tough connective tissue. Each muscle fiber is a single poly-nuclear cell measuring .0004 to .004 inch in diameter and often an inch or more in length. Each has a thin tender sheath or covering (the sarcolemma) which incloses the meat juices (the protoplasm) and nuclei. These juices are largely soluble in water. Hundreds or even thousands of fibers are bound together by connective tissue into a small bundle. These small
bundles are in turn bound together by connective tissue to form larger bundles, and a number of these larger bundles are tied together by connective tissue to form a muscle (Figs. 2 and 4).

Connective tissue literally holds the body together. It contributes to the toughness of meat, as is readily understood since tendon or gristle is entirely connective tissue. Such tissue is made up of very small mononuclear cells which form a tough intercellular substance called collagen (Fig. 3). These cells themselves are much smaller in diameter than muscle cells.

There is a heavy concentration of connective tissue at the end of the muscle to form the tendon, which attaches the muscle to the bone (Fig. 6). That is why cuts from the tendinous end of a muscle are tougher than cuts from the center of a muscle (Fig. 5). Since each muscle is inclosed in a heavy envelop of connective tissue, the fewer muscles in a cut, the more tender it usually is. As an animal becomes older, its connective tissue increases in amount and becomes tougher. Meat from young ani-
Too much gristle makes meat tough. Note amount of connective tissue in this muscle. Cross-section, enlarged 1¼ times.

(Fig. 2)

Cross-section of muscle magnified 25 times. The dark streaks in the white areas around the groups of muscle cells are connective tissue, or gristle. Such meat has to be cooked for a long time with water.

(Fig. 3)

Tender meat (below) has a very small proportion of connective tissue. Cross-section, enlarged 1¼ times.

(Fig. 4)
mals is therefore more tender than meat from old animals, other factors being equal.

When an animal fattens, the fat is deposited mostly in certain cells of the connective tissue, altho small droplets of fat may occur in any cell of the connective tissue. There are certain connective cells, called fat cells, in which fat may be stored in huge amounts. When enough of these cells have had fat deposited in them, the connective tissue becomes fat tissue. The large deposit of fat in these minute cells greatly enlarges them, stretching the cell wall and making it thinner (Fig. 7), much as inflating a toy balloon stretches its wall and makes it thinner. As a result, these cells are more easily ruptured in chewing than cells in which fat has not been deposited. Meat containing considerable fat is therefore more tender than meat containing only a little fat.

A fattening animal first stores fat mainly around some of the internal organs—kidneys, stomach, and intestines. Such fat is of little importance to the consumer.

A little later, fat is deposited in the connective tissues around the muscles. This covering of fat is very important to the housewife who seeks quality in the beef she buys. It prevents the meat from drying out excessively during cooking, helps to retain meat juices, and adds to the flavor of the lean just as butter adds to the flavor of bread. It is not necessary to add butter when serving a steak from a well-finished steer.

From the standpoint of the beef connoisseur, the most important deposit of fat is in the fine network of connective tissue which binds the muscle fibers together. This fat is known as marbling (page 12). Marbling adds greatly to the tenderness of a cut and enriches its flavor. Since it usually is the last fat deposited, animals must be quite fat in order to have proper marbling. As the cost of production increases with the degree of finish, well-marbled beef is relatively expensive.

**Quality**

As the term is used in beef grading, quality refers to texture or grain, firmness and color of the lean, firmness and color of the fat, and the character of the bones.
Gradual increase in connective tissue takes place toward tendon end of a muscle. Cross-section at upper left is from the center of a muscle; that at lower right is from a point near the tendon of the same muscle. (Enlarged 2\(\frac{3}{4}\) times) (Fig. 5)

Tendon end of a muscle is tough because the tendon (right), which fastens the muscle to the bone, is made up of connective tissue. (Fig. 6)
Fatty tissue (left, enlarged 200 times) is made up of cells of connective tissue “blown up” with fat. This stretching thins the cell walls and makes the meat more tender. (Dark area at extreme left is muscle tissue.) Good marbling is shown by the streak of fat tissue taking up the center of the picture at the right, enlarged 25 times. For poor marbling see Fig. 3. (Figs. 7 and 8)

Lean. The lean of high-grade beef has a fine texture or grain and a velvety feel when the finger tips are rubbed lightly over it. It should be firm to the touch and not soft, watery, or gummy.

In young animals (baby beef) the lean should be a bright pink. In more mature beef (see pages 12 and 13) it should be a bright cherry-red; dark or purplish red or a black usually indicates inferior quality. Most beef with dark lean comes from old cattle and is consequently tough and stringy, or else it has been cut too long before being sold. Many retailers cut a number of steaks, roasts, and other cuts for display in showcases; if these are held too long before they are sold, they become dark and dried out and less palatable because they absorb undesirable flavors from the showcase or refrigerator. It is true that some beef carrying a dark lean has as good a flavor as beef with a bright red lean, but this is the exception rather than the rule.

The housewife should not, however, confuse freshly cut beef with beef that is naturally dark. When first cut, beef is quite dark but immediately begins to brighten and reaches a maximum brightness in about an hour. Then it slowly darkens and in several days becomes quite dark.

Fat. The fat of high-grade beef is usually firm and white or creamy white. Some has a yellowish fat, but such fat is more...
often found in a lower grade of beef. Yellow fat is objectionable to meat buyers because it indicates inferior breeding and advanced age. Certain breeds of dairy cattle and most scrub cattle have yellow fat; and as cattle become older there is a marked increase in the amount of yellow pigment (carotene) in their fat. Consequently many housewives associate yellow-fatted beef with the tough, stringy, unpalatable meat of the worn-out dairy cow.

While most dark beef and most yellow beef rightfully belong in the lower grades, color is not a complete index to palatability. Meat from a steer which has yellow fat and purple lean but otherwise grades Choice is equal in palatability to that from a white-fatted and red-meated steer or heifer of similar grade.

**Bones.** The bones of young beef are porous, dark red, and comparatively soft; the bones of older cattle are flinty and gray to white. The tips of the chine bones of the ribs and chucks of young animals bear white cartilage or gristle, known as "buttons" (Fig. 9). This is why in the beef trade carcasses of young cattle are called "button stuff" and carcasses of mature cattle, "hard bone carcasses."

**Aging improves palatability.** Beef that is well finished (that is, has considerable fat) is much more tender and has a better flavor after several weeks in a refrigerator at a temperature just above freezing than it had when freshly slaughtered. Most beef in retail markets is sold for consumption within one to two weeks after slaughter. Hotels and restaurants which cater to the best trade allow their steaks and roasts to hang for several weeks in the cooler before using them. During this time the small amount of muscle sugar changes to lactic acid, which attacks the connective tissue, partially breaking it down to gelatin (see *marinating*, page 21), and consequently making the meat more tender. This process is known as ripening or aging.

Only beef of the higher grades—Prime, Choice, and Good—

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1This statement is based on the results of a large number of palatability tests made by the U. S. Department of Agriculture and several experiment stations, including the Illinois Station. For report of Illinois tests see Ill. Agr. Exp. Sta. Bul. 475, 1941.
Choice mature beef has thick covering of white or creamy-white fat. Lean is bright cherry-red, well marbled. Usually best quality in retail market. Good beef (below) has less fat, less marbling, slightly darker lean. Excellent quality, more economical.
Commercial grade usually has rather thin covering of yellowish fat. Lean, darker than good, has little or no marbling. Utility (below) has thin covering of yellow or bluish-fat, dark lean, no marbling. Both grades are relatively cheap and economical.
Appearance of the chine bones is an indication of the age of the animal. Those of the cow (right) have ossified to the tips, indicating considerable age; those of the yearling steer (left) have white cartilage ("buttons") on the tips. Some of the fat has been cut off to show the buttons more clearly. (Fig. 9)

can be ripened successfully. Low-grade beef which contains but little fat does not ripen but spoils after a few weeks.

Ultra-violet lamps are sometimes used to "tenderize" meat. It is claimed that certain of these rays retard the growth of bacteria and mold on the meat, so the beef may be safely stored at a higher temperature. The theory is that the higher temperature speeds up the change of muscle sugar to lactic acid, which in turn changes some of the connective tissue to gelatin and brings about rapid ripening.

**Government grades are consumer’s best guide**

To judge the quality of beef by looking at a carcass or a retail cut takes more experience than most consumer-buyers possess. Recognizing this problem, the Government several years ago started a system of official meat grading. A competent Government grader examines every carcass and stamps a grade mark along the back with harmless indelible ink, so that the name of
the grade\textsuperscript{1} appears on every major retail cut (\textit{Fig. 10}). So the consumer has the benefit of expert, unprejudiced judgment.

Another stamp, certifying that the animal was free from disease, was slaughtered under sanitary conditions, and that the carcass was wholesome for food when it left the packing plant is placed on each wholesale cut of meat that goes into interstate commerce. Graduate veterinarians are employed by the Government to do this work. \textit{Fig. 10} shows this stamp also.

While there are seven official grades of beef, only four—U. S. Choice, U. S. Good, U. S. Commercial, and U. S. Utility—are commonly found in retail markets. (U. S. Prime is too costly and U. S. Cutter and Canner are too poor.) The letters “U. S.” are important, as only Government grade-stamped beef may be so marked, and meat is not Government-graded unless it is so marked. The colored photographs on pages 12-13 and 32-33 show rib and chuck cuts in the four common retail grades.

\textbf{U. S. Prime}\textsuperscript{2} carcasses are the “show cattle” of the beef trade. There are comparatively few of this grade; in certain seasons and in some localities there is practically no Prime beef. Prime carcasses are excellent in conformation and quality. They must have excellent finish and marbling because they go to a trade which requires rich tender steaks and roasts even if they include considerable waste fat.

Prime beef is used almost exclusively in the best hotel, restaurant, dining-car, and steamship trade. Very little goes into retail channels because of its cost and because it has a large amount of fat, most of which usually is not eaten. Only steers and heifers qualify for this grade.

\textbf{U. S. Choice} is the highest grade ordinarily available in quantity for the retail trade.\textsuperscript{3} It closely resembles Prime beef but usually lacks the high finish demanded for that grade. The fat is white or creamy white and very firm. The lean is a bright red or pink; it is firm and velvety to the touch and well marbled.

\textsuperscript{1}The name of the class or sex is required only on bulls and stags (see page 4).
\textsuperscript{2}This grade has been temporarily discontinued for the duration of the war.
\textsuperscript{3}Only a small amount of this grade of beef is now (1944) available owing to the quantity of feed needed to produce it. See Illinois Station Bulletin 501.
The U. S. grade stamp runs the length of a Government-graded carcass and is placed on every major retail cut. The circular stamps have no relation to the grade; they are inspection stamps certifying that the carcass is from a healthy animal slaughtered under sanitary conditions. (Photo courtesy Decatur Herald-Review)
Choice beef goes to the better hotel, restaurant, dining-car, and steamship trade and to the best retail trade. It is too fat and wasty for many consumers, but is excellent for those who are willing to pay for flavor and tenderness. In this grade also may be included only steer and heifer carcasses.

**U. S. Good** is an excellent grade of beef for those who want both palatability and economy. Such beef has good flavor, is reasonably tender, and is not wasty. It is usually moderate in price. It is served extensively in hotels and restaurants that cater to “commercial” rather than fashionable patrons. Good steer and heifer carcasses furnish the bulk of the beef sold in good retail markets. U. S. Good includes steers, heifers and a few top carcasses of young cows.

Carcasses grading Good are somewhat lacking in conformation, finish, and quality, but have enough finish and marbling to show that they have been fattened on a grain ration (carcasses of cattle fattened on pasture exclusively seldom have enough finish to grade Good).

**U. S. Commercial** carcasses include steers, heifers, and the better cows. They lack the conformation, finish, and quality of the better grades. Commercial is usually the highest grade given to cattle that are not grain-fed.

This grade of beef is not as rich in flavor nor as tender as are the higher grades, but it does provide a large amount of fairly good lean at an economical price. The fat is usually thin and yellow; the lean is often dark and soft, with no marbling. Beef of this grade is used in retail markets, hotels, and restaurants which cater to a trade with limited buying power.

**U. S. Utility** is the lowest grade of beef sold in most markets. It includes steers, heifers, and cows. Its only recommendation is its economy. The little fat it has is usually yellow. The lean is often dark, soft, coarse, and stringy. It is used in the cheapest trade, much of it in the form of boneless cuts.

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1Before July 1, 1939, Commercial was known as Medium and Utility as Common. The terms Medium and Common are still used very frequently in the beef trade for these grades.
U. S. Cutter and U. S. Canner are the lowest grades of beef used for human food. It is sometimes used for boneless cuts in the cheapest markets, some of it is used for cured beef, some for canning, and some for sausage, such as bologna, frankfurters, and meat loaf.

**O. P. A. grade stamp and packer brands**

O. P. A. grades. Prior to World War II, Government beef grading was not obligatory altho Government-graded beef could be bought in Chicago and suburbs and in many other towns and cities of Illinois.

Soon after price ceilings were established by the Office of Price Administration, Government beef grading was made compulsory in all cases where the Government is able to furnish a grader. If the Government is unable to furnish a grader, it may give permission to the slaughterer to grade his own beef, using the same specifications as for the Government grades. The so-

The O. P. A. grade stamp and the permit number of the slaughterer are placed on each wholesale cut of all beef which is not government graded. Unstamped, ungraded beef is “black market” beef.  

(Fig. 11)
called “O. P. A.” grades are AA for Choice; A for Good; B for Commercial; and C for Utility. The grade and slaughter permit number must be stamped on each wholesale cut (Fig. 11).

**Packer-branded beef.** Many packers, before World War II, marked beef with various trade names (brands) indicating the grade of beef as determined by the packer. Such beef was known as branded beef. Usually both the trade name and the name of the packer were indicated, but sometimes only the packer’s name was used. Most packers also sold unbranded beef, and many sold Government-graded beef. Some packers now include their own brand along with the Government or O. P. A. grade.

**Prices vary with grade and kind of cut**

The higher grades of beef, as has been pointed out, have a richer flavor, and are more tender than the lower grades. Also certain cuts are more palatable than other cuts from the same carcass. Naturally the higher grades and the more desirable cuts sell at a higher price even tho there are only minor differences in their nutritive value.¹

Under normal conditions the difference between the wholesale (and of course the retail) prices of different beef grades varies considerably, depending primarily on supply and demand and secondarly on the price of by-products. In general, a difference of 1 cent a pound in the wholesale price of different grades of carcass beef means a difference of 3 to 4 cents in the retail prices of the more expensive cuts such as porterhouse and sirloin, 1 to 3 cents in the moderately priced cuts such as round, ribs, rump, and chuck, and 1 cent or less in the cheap cuts such as neck, shank, and plate. In fact plate meat (rib ends, navel, and brisket) from

¹The Office of Price Administration has set wholesale ceiling prices on beef carcasses and cuts. Choice carcasses are 1 cent a pound more than Good; Good are 2 cents over Commercial; and Commercial are 2 cents above Utility. The present spread between the higher and lower grades is abnormally narrow.
Choice and Good carcasses often sells for less than the same cuts from the lower grades because of the larger amount of fat in the higher grades. Thus, if there is a difference of 2 cents between the wholesale price of a Choice carcass and a Good carcass, a Choice porterhouse steak will sell at retail for 6 to 8 cents more than a Good porterhouse; a Choice round steak will sell for 2 to 6 cents more than a Good round steak; while the neck, shank, and plate meat of the two grades will sell for about the same price.

The relation between the prices of the different retail cuts is discussed further on pages 24 to 41.

**Basic principles of good beef cookery**

Since detailed directions for cooking the various cuts of beef can be found in any good cookbook or in leaflets issued by the Government, only the underlying principles of beef cookery will be described here. Because the grade and the kind of cut determine how it should be cooked, one should know these principles before deciding what to buy.

There are two basic methods of cooking beef—by dry heat and by moist heat. Dry heat, by keeping in most of the juices, keeps in the flavor also. Moist heat makes the meat more tender but draws out part of the flavor.

**Cooking by moist heat.** Moist heat is usually applied to the tougher cuts. Connective tissue, it will be recalled (page 6), makes meat tough. Much of the connective tissue is made up largely of a protein called collagen. In the presence of heat and water, collagen forms gelatin, a food with which everyone is familiar. Thus tough meat becomes tender when cooked with water. The water, however, dissolves a considerable portion of the juices—known as "extractives"—from within the cells of the

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1Leaflet 17, U. S. Department of Agriculture, entitled *Cooking Beef According to the Cut*, can be obtained from the Superintendent of Documents, Washington, D.C., for 5 cents.
muscle tissue, and with the removal of these juices goes much of the flavor of the cooked meat. This flavor need not be lost, however. In fact it is retained in the gravy which is almost always served with moist-cooked meat or it can be used for soup stock.

The most common methods of cooking meat by moist heat are stewing and braising. *Stewing* is also properly called "simmering" and improperly called "boiling." Meat should never be boiled—it should be stewed or simmered, usually in considerable water, *just below the boiling point*. The meat may be cut into small, thin pieces, especially for soup, or left in a large thick piece. Very tough meat can be made tender by stewing.

*Braising* is suitable for "semitough" meat. The beef is browned in a small amount of fat and cooked slowly on top of the stove in a covered utensil, such as a "Dutch oven," with a small amount of water. There are several variations of braising: a pot roast is a large piece of meat cooked by braising; a fricassee is made by braising small pieces of meat; meats cooked in a casserole are braised, as are also Swiss steaks.

Other methods of cooking with moist heat which are sometimes used for very tough meat are marinating and steam-pressure cooking. *Marinating* consists of adding dilute acid, such as acetic acid in the form of vinegar or lactic acid in the form of sour milk. The acid helps to gelatinize the connective tissue. Sauerbraten, hunter's steak, Swiss steak with tomato dressing, and souse (pickled pig's feet) are examples of marinating. *Pressure cooking* is a good method for very tough meat since a higher temperature can be applied than in stewing or pot-roasting, causing more complete breaking down of the connective tissue.

**Cooking by dry heat.** In order to keep the most flavor in meat, it must be cooked with no water added—that is, by dry heat. When the meat is cooked in this way, the proteins at the surface of the meat are coagulated much as is the white of an egg when cooked. This forms a surface crust which keeps the meat juices and extractives in the interior of the meat, thus retaining most of the original flavor. Obviously only tender cuts should be cooked by dry heat.
The common methods of cooking with dry heat are roasting, broiling, and frying. **Roasting** is done in an uncovered pan (in the case of beef) in an oven at a low to moderate temperature (300° to 325° F.). Within reasonable limits, the larger the roast the better. Thus a thick roast weighing 6 or 7 pounds will give much better results than a thin one weighing only 2 or 3 pounds. The use of a meat thermometer (**Fig. 12**) for cooking roasts of beef, veal, lamb, and pork is recommended even for the experienced housewife.

**Broiling**, sometimes called grilling, is cooking by radiant (direct) heat from hot coals, a gas flame, or an electric element. Steaks should be cut 1 to 2 inches thick for broiling. This method is suitable only for meat that is very tender.

**Frying** is done with a small amount of fat in a frying pan. It is adapted to the less tender steaks cut thin—\(\frac{3}{8}\) to \(\frac{5}{8}\) inch. **Sautéing** is similar to frying; the meat is browned quickly in a small amount of fat and turned frequently. **Pan-broiling** is cooking in a hot uncovered frying pan without any fat except the fat that is in the meat. The meat is turned frequently to prevent burning, and the fat that cooks out is poured off as it accumulates in the pan. The salvaged fat may be used for cooking or made into soap or it should be turned into the meat market for munitions of war. Pan-broiling is a good way to cook thick tender steaks when it is not practicable to broil them.
**Location of primal cuts**

Beef carcasses are sold to retailers as *sides* (half-carcasses split down the center of the backbone); *quarters* (a side divided into a forequarter and a hindquarter between the 12th and 13th ribs); and in small units known as *primal* or *wholesale* cuts.

In cutting a beef carcass four general practices are followed: (1) tender meat is separated from tough meat because the two require different cooking; (2) thick is separated from thin meat for the same reason; (3) the muscles are cut across the grain to make the meat more tender; and (4) as much low-priced meat is left on the high-priced cuts as the consumer will stand for. The amount of low-priced meat left on the high-priced cuts is now specified by O. P. A. regulations.

Formerly beef was cut into wholesale cuts in different ways in different parts of the United States. The “midwestern” or “Chicago” method was quite generally followed in Illinois.

Before price ceilings could be established, O. P. A. had to devise a standard country-wide method of cutting beef. The method adopted is a modification of the “Chicago” or “midwestern” method. The names and locations of the primal, or wholesale, cuts are shown in Fig. 13.

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**O. P. A. standard primal (wholesale) cuts.**

*(Fig. 13)*
Retail cuts: location, use, and how to cook

Retail cuts of beef, as well as wholesale cuts, have been more or less standardized all over the United States by the Office of Price Administration. The location of the various retail cuts, as recognized by O. P. A., is shown in Fig. 14. During meat rationing current retail ceiling prices must be posted in all meat markets.

1 Hind shank
2 Flank steak
3 Flank stew
4 Plate and rib ends
5 Brisket
6 Fore shank
7 Heel of round
8 Round steaks
9 Rump pot roasts
10 Knuckle soup bone

Sirloin steaks
11 Wedge-bone
12 Round-bone
13 Double-bone
14 Hip- or pin-bone
15 Porterhouse steaks
16 T-bone steaks
17 Club steaks
18 Rib roasts and steaks
19 Blade rib roast
20 Chuck rib or blade pot roasts and steaks

21 Neck

Location of the retail cuts of beef and their relation to the skeleton. (Fig. 14)
Porterhouse is the most palatable but the most expensive steak. The backstrap (bottom right) is reasonably tender and full of flavor. The tenderloin (top right) is very tender but lacks flavor. The tail or strip end (left) should be used for stew or put thru the grinder. One steak usually serves 3 people. (Fig. 15)

**Steaks**

**Porterhouse steak.** The aristocrat of the steaks is the porterhouse (Fig. 15). This steak comes from the rear of the short loin and consists essentially of three portions of lean. The tenderloin portion is quite large in the first steaks but becomes rapidly smaller in the later cuts and is entirely absent in the last few steaks. Steaks from the center of the short loin have only a small amount of tenderloin and are called T-bone steaks as distinguished from porterhouse.

Porterhouse steaks have a large amount of waste fat and so are not economical sources of lean meat. The high retail price which they command (usually about 1¼ to 1½ times that of the round steak) and the poor quality of the strip end add still further to their costliness. A porterhouse makes 2 average servings per pound. It is used mostly for special dinners where expense is not the important consideration.

Porterhouse steaks from Prime, Choice, and Good carcasses should be cut thick—1 to 2 inches—and broiled. The lower grades should be fried. A host need not hesitate to serve the tenderloin to the women guests and the backstrap to the men, if he wishes, since—at least within the observation of the authors—women are more likely to prefer tender meat and men are more interested in flavor.
Club steak is similar in quality to the backstrap of the porterhouse but is much more economical. Cut thick and broiled, one pound makes an excellent steak for 1 or 2 people. (Fig. 16)

**Tenderloin steak.** Prior to O. P. A. regulations the tenderloins were often stripped out from the loins of low-grade carcasses and sold separately at a high price, usually above Choice porterhouse steaks. Altho tender, the flavor of a tenderloin steak, often called *filet mignon*, is not very good and these steaks are not recommended.

**Club steak.** Except that a club steak is smaller, has little or no tenderloin, and includes less fat and tail, it is essentially the same as porterhouse. These steaks (*Fig. 16*) come from the front end of the short loin. They usually sell for a few cents less than porterhouse and T-bone and are much more economical. Like porterhouse, the better grades should be cut thick and broiled. They are especially good for "stag" parties, where individual steaks weighing $\frac{3}{4}$ to 1 pound each are served.

**Rib steak.** The wholesale rib may be cut for steaks instead of roasts. O. P. A. specifies that rib steaks shall be cut either 7 or 10 inches long. The 10-inch cut, which includes more of the rib end, of course sells for less than the 7-inch cut. Steaks from the light end of the wholesale rib (*Fig. 25*) are almost as satisfactory as club steaks, but under O. P. A. regulations they sell for much less per pound. Steaks from the heavy or blade end of the rib (*Fig. 28*) sell for the same price as those from the light end but are only slightly better than the much cheaper chuck steaks.
Wedge-bone sirloins are the first steaks cut from the sirloin (coming next to the round). Least palatable of the sirloins, they are the most economical. Cut thick for broiling, a wedge bone will make 6 to 9 servings. The large “tip” (right) is sometimes sold separately as a roast. (Fig. 17)

Sirloin steak. Next to porterhouse, T-bone, and club steaks in palatability are the sirloins (Figs. 17 to 20). These steaks differ greatly in appearance and some in palatability and economy, according to their location on the carcass. Before the war, they usually sold for about one-fourth more than round, tho in

Round-bone sirloins are excellent except for the tip at the right. They lie next to the wedge-bone steaks. They are not quite so palatable as doublebone and pin-bone sirloins. A thick round-bone serves 6 to 8 people. (Fig. 18)
Double-bone sirloins are the best of the sirloins. They lie next to the round-bone sirloins and include a pad of fat (right tip). Cut thick, this steak will serve 6 to 8 people. (Fig. 19)

some small towns porterhouse, sirloin, and round steaks all sold at the same price.

When from Prime and Choice carcasses, sirloin steaks may be cut thick and broiled. They are excellent for parties and steak fries. Those of lower grades should be cut thin and fried. Ordinarily about 2 servings are figured for each pound of hip-bone, and 3 servings for each pound of double-bone, round-bone, and wedge-bone steak.

The wedge-bone steaks are the least palatable of the sirloins because a large part of their lean, the “tip,” is cut with the grain of the meat, making it less tender.

A pin-bone or hip-bone sirloin is a wasty steak, containing much bone and fat and a strip end (left). These steaks are small, serving only 2 or 3 people. Because the other side of this steak resembles a porterhouse (it lies next to the porterhouse), it is sometimes sold as such. It is a good idea to look at both sides of a cut when buying meat. (Fig. 20)
First-cut round steaks are the best of the round steaks. The “top” round (large muscle in upper half of picture) is better than the “bottom.” (Fig. 21)

**Round steak.** As the name implies, round steaks are cut from the round and can be recognized by their oval shape and their small round bone (*Figs. 21-23*). Because their meat is nearly all edible and they are moderately priced (⅛ to ⅓ less than porterhouse), they are much more economical than porterhouse, club, or sirloin.

When cut from a high-grade carcass, round steaks have excellent flavor, but they are not so tender as porterhouse, club, and

**Center-cut round steaks,** altho not quite so good as the first cuts, have excellent flavor and are reasonably tender if of Good or Choice grade. The bone end is better than the other end.  
(Fig. 22)
Steaks from the lower part of the round are best used for Swiss steaks. They have considerable connective tissue and so must be cooked with moist heat if they are to be made tender.

(Fig. 23)

Sirloin steaks and so are not recommended for dinner parties. The lower part of the round is better suited for pot roasts or Swiss steaks (a modification of pot-roasting) than for steaks because it has more connective tissue.

Well-aged top round from Prime and Choice beef can be broiled. Other grades should be fried. One pound serves 4 people.

**Flank steak.** Since this steak (Fig. 24) is practically all lean meat and normally sells at about the same price as round, or a little less, it is more economical than round. A flank steak should be braised. There are only two of these steaks in a carcass.

Flank steaks are rich in flavor and boneless. Each consists of a rather flat fan-shaped muscle weighing 1 to 2 pounds and making good servings for 4 to 8 people. As the muscle fibers run lengthwise, it is necessary to score the steak—make light cuts across the grain $\frac{1}{4}$ to $\frac{1}{2}$ inch apart—to prepare it properly for cooking.

(Fig. 24)
Chuck arm, shoulder round, or shoulder arm steak. These are different names for the same steaks, which are cut from the lower part of the wholesale chuck just above the shank. They are somewhat like round steaks in shape and bone and are sometimes sold as round. They are easily identified, however, by the shape and position of the muscles; also they include cross-sections of the ribs or the breast-bone unless the butcher has trimmed them off to help deceive the customer (compare Fig. 32, page 38, with Figs. 21 and 22).

Altho they have only slightly more waste than round, these steaks are not so tender as round of the same grade. They usually sell for about $3 to $4 the price of round. They should be fried, "Swissed," cubed, or pounded. Shoulder round is an excellent and economical substitute for regular round for making high-grade ground beef or meat loaf.

Chuck (or blade) steak. These steaks are cut from the rear end and center of the chuck and contain cross-sections of shoulder blade, backbone, and rib. Having more connective tissue, they are not so tender as the steaks from the hindquarter. Also the lean includes more muscles whose fibers run in various directions, making it impossible to cut all across the grain. They have little fat but quite a bit of bone. When cut from a high-grade carcass, they have good flavor, and since they sell for less per pound than most other steaks they are economical.

The first chuck steaks are not so satisfactory as the "7-bone" steaks cut farther forward (Figs. 30 and 31).

Chuck steaks should be cut thin, pounded well if from the lower grades of carcasses, and fried. They usually sell for 3/4 to 3/4 as much as round and serve about 3 people per pound.

Cube steak. The tougher steaks, such as bottom round, shoulder arm, and chuck, are often treated to make them more tender. The bone and some of the connective tissue are removed, and the steak is put thru a machine which crushes or cuts the connective tissue, making the meat more tender. Unfortunately much of the meat juice (and flavor) is lost in cooking. These steaks are known most commonly as "cube" or "minute" steaks.
Choice yearling beef has less fat and marbling than Choice mature beef. Lean is light pink. Less wasty, it is extensively used by discriminating consumers. Good (below) meets the requirements of the average consumer in quality and economy.

CHUCKS OF OFFICIAL GOVERNMENT GRADES OF CARCASS BEEF
FACE OF 5TH RIB
Commercial is of medium quality, has less fat than Good; fat usually slightly yellow; lean darker with little or no marbling. Utility (below) gives most lean for money. Lean is dark, no marbling. Small amount of yellow or blue-gray fat.
The price of cube steaks depends on their grade and the cut from which they come. Being boneless, these steaks serve about 4 people per pound. They are widely used in cheap restaurants and for steak sandwiches. The same tenderizing effect produced by a cubing machine can be obtained at home by pounding a tough steak with the edge of a saucer or plate to break the fibers. Sometimes flour is rubbed or pounded into the meat to absorb the juices.

**Ground beef.** The trimmings from the flank, neck, short plate, brisket, shank, and lower part of the round are used for ground beef, or hamburger. Cod fat, or suet, is often added (O. P. A. permits 28 percent of fat in hamburger). Ground beef of this kind includes a good deal of fat and connective tissue and is of poor quality; hence many people who want quality hamburger buy round steak and have it ground. Practically as good and much more economical hamburger can be obtained by buying shoulder arm or chuck of Good or Choice grade and having it ground. A pound of ground beef serves 4 to 5 people.

**Roasts**

**Rib roasts** are richest in flavor, the most tender, and the most attractive of the beef roasts (*Fig. 25*). They include the 8th to 12th ribs. Each roast includes a section of the backbone and one or more ribs. Except for blade ribs and a few other cuts from

A standing rib roast from top-quality beef is unexcelled in palatability. It is, however, uneconomical because of its large content of fat and bone and the inclusion of the rib ends. (*Fig. 25*)
A rolled rib roast (left) is a poor way to buy a rib roast. "Hotel" style ribs (right) are easy to cook, carve, and eat. Note position of meat thermometer in this de luxe roast, which is ready for the roasting pan. (Figs. 26 and 27)

high-grade, well-ripened carcasses, they are the only satisfactory beef roasts.

Ribs usually sell for slightly less per pound than round steak of similar grade, but they are much more costly in terms of edible meat because of the large amount of fat and bone which they contain as well as rib ends. The most desirable part, the rib eye (large muscle lying in angle of rib and vertebrae), makes up only about one-fifth of the cut.

In order to cook to the best advantage, rib roasts should be at least two ribs thick. Nearly a pound of rib is necessary for a serving. These roasts from Prime, Choice, and Good carcasses are usually purchased only when cost is not a consideration.

A blade rib roast is more economical than a roast from the "light" end of the ribs but not nearly so palatable. It usually sells for less per pound and contains more edible meat tho not nearly so much rib eye as the first five ribs.

(Fig. 28)
Rump pot roasts are moderately priced and economical if the butcher removes a good share of the bone, as is usually done. (Fig. 29)

Ribs from Commercial carcasses are fairly tender and well flavored. Those from Utility and lower grades should be cooked with moist heat. Low-grade ribs usually sell at a higher price than their palatability justifies.

Ribs are often rolled and boned (Fig. 26). From the customer's standpoint this is not a good practice. When done before the ribs are purchased, the butcher may leave extra-long rib ends on the cut which are not apparent to the customer. Also, roasting is not a satisfactory way to cook the rib ends, which should be stewed or braised. Then too a rolled rib is hard to carve at the table because of the skewers or string used to tie it and the absence of bones to hold it together.

An excellent way to prepare a rib roast is to have it cut "hotel style" (Fig. 27). The backbone and the rib ends are cut out, leaving only the rib eye and the rib bones. When placed in the roasting pan, the roast should rest on the ends of the rib bones, with the fat covering at the top, making the roast self-basting. It is roasted in an open pan in a moderately hot oven—300° to 325° F. A meat thermometer helps to insure the right temperature. Bones and rib ends may be stewed or rib ends braised.

Blade ribs are from the heavy end of the wholesale rib and contain the tip of the shoulder blade. A further description of this roast is given under Fig. 28.
A chuck rib or blade pot roast contains a section of the shoulder blade and is usually cut two ribs thick divided vertically. Chuck ribs are also cut thin and used as steaks. When chuck pot roasts are cut perpendicularly, the end containing the backbone is the better. (Fig. 30) (See also Fig. 31)

### Pot Roasts

**Rump.** Many people regard a pot roast from the rump (Fig. 29) as the best in the carcass. The lean is not so tender as that of ribs of similar grade but is more tender than the chuck and very rich in flavor. It has about the same amount of edible lean as the rib cuts but more than twice as much as is found in the most desirable part of the rib roast, the rib eye.

The wholesale rump is usually cut into two or three retail cuts across the vertebrae. The center cut is the best. Altho some of the bone is usually taken from the rump before it is sold, the price is based on the unboned cut. Sometimes all bone is removed and

A 7-bone chuck pot roast is cut from the thick part of the chuck near the neck. It is a more satisfactory cut than the one from the 5th and 6th ribs shown above. (Fig. 31)
Shoulder arm pot roast is economical. It can be cut thin for steak and fried or cut medium thick for a Swiss steak. It should not be confused with round (see Figs. 21 and 22).

(Fig. 32)

the rump rolled, but the buyer pays for the bone whether he gets it or not. As usually cut, rump sells for about \( \frac{3}{4} \) the price of round. A pound serves 3 people.

Rumps from Prime and from well-aged Choice beef may be oven-roasted. Other grades should be pot-roasted.

**Chuck ribs.** Chuck or blade ribs come from the rib end of the chuck. They contain, besides the ribs, a section of the shoulder blade and the backbone. It is true of chuck pot roasts as of chuck steaks that the first ones are not so desirable nor so economical as the 7-bone pot roasts which are cut farther forward (Figs. 30 and 31).

When cut from carcasses grading Good or better, chuck ribs are rich in flavor and, if properly cooked, are tender. They contain almost as much edible lean as round steak but sell for considerably less, hence are very economical. The better grades should be pot-roasted, the lower grades stewed.

**Shoulder arm.** Shoulder arm resembles round (Fig. 32) and is sold by some unscrupulous butchers as such. The muscles, however, are much different in number and appearance and the arm contains the ends of the ribs unless they have been removed. The arm is rich in flavor but requires long slow cooking with more or less water. It comes from the lower part of the chuck.

Both because of its high proportion of lean (serving 3 to 4 people per pound) and its low price (\( \frac{2}{3} \) to \( \frac{3}{4} \) as much as round), the shoulder arm is an economical cut. The better grades should
Heel of round is an economical cut, but it needs thorough cooking with water to break down the large amount of connective tissue in it. (Fig. 33)

be pot-roasted, and the lower grades stewed. Shoulder arm is an excellent and economical substitute for round in high-grade hamburger or meat loaf.

Heel of round. This is a boneless three-cornered cut from the lower part of the round (Fig. 33). It is rich in flavor but tough. It is almost entirely lean, a pound serving 4 people. It is very economical, selling for $\frac{1}{2}$ to $\frac{3}{4}$ as much as round. The better grades may be pot-roasted, the lower grades stewed or ground.

Rib ends or short ribs. These come either from the rib roasts when the latter are cut "hotel style" or from the upper part of the plate (Fig. 34). When cut from Prime or Choice beef they are too fat for most people.

Rib ends include considerable bone and sell for $\frac{1}{3}$ to $\frac{1}{2}$ the price of round. A pound serves 2 to 3 people. This cut should be braised or stewed.

Rib ends or short ribs from carcasses grading Good or lower are quite economical. Those from Choice and Prime carcasses are usually undesirable because they have too much fat. (Fig. 34)
Plate roll is excellent for stewing. Do not roast it or mistake it for a rolled rib such as shown in Fig. 26.  

Stew Meat

Cuts that are too thin or too tough to be cooked satisfactorily by other methods are usually classed as stew meat.

Short plate and brisket. In these cuts the fat and lean are in alternate layers similar to bacon. Ends of ribs and sections of the breastbone are usually included in these cuts. There is a high percentage of bone and, in beef with desirable finish, a large proportion of fat compared with other cuts. This fat, however, is sweet and well suited to forming a part of stewing meat. The cuts from the forward end of the plate or brisket have the most waste fat.

The value of these cuts is determined by the relative amounts of lean, fat, and bone which they contain—the less bone the better. A fair amount of solid white fat, however, improves their quality and is therefore desirable. Often the meat is boned, tied in a roll, and sold fresh, or it is cured and sold as corned beef (Fig. 35).

This is cheap meat, selling for about $\frac{1}{3}$ as much as round and serving 2 to 3 people per pound. It is especially good with noodles, dumplings, etc., where considerable fat can be utilized.

Soup bones. The fore and hind shanks and the large joints of the carcass (Fig. 36) are used for soup bones. When meat is
Soup bones such as these are cut from the front or hind shank and usually priced according to amount of meat on them. (Fig. 36)

wanted for eating rather than for soup stock, the cuts from the middle of the shanks are best, and if they are from a well-finished carcass the meat is of good flavor. All soup bones are about on a par, from the standpoint of economy, for they are usually priced according to the amount of meat on them. They can often be used economically in the home.

**Neck.** The neck is cut from the forward end of the chuck. It is very tough, contains considerable lean and little fat, and sells at a low price. It should be stewed or ground.

**Other meat for stewing.** Heel of round, shoulder arm, and chuck ribs from low-grade carcasses should be stewed. Because of their high content of lean meat and their low prices, they are very economical cuts.

**Variety Meats**

Miscellaneous cuts—such as liver, heart, tongue, sweetbreads, brains, kidneys, ox tails, and tripe—make up only a small part of the beef animal. They are important, however, because, with the exception of ox tail and tripe, they are very high in nutritive value. There is little or no waste except in ox tails. All are moderately priced except sweetbreads.
GUIDE TO ILLUSTRATIONS

Structure of Meat

1-4 6, 7 Sections of muscle
5, 6 9 Increase in connective tissue toward tendon end of muscle
7, 8 10 Fatty tissue and good marbling
9 14 Bones as indicators of age

Grade Stamps

10 16 U. S. grade stamp
11 18 O. P. A. grade stamp

Location of Different Cuts

13 23 Location of primal (wholesale) cuts
14 24 Location of retail cuts

Photographs of Retail Cuts

Steaks

15 25 Porterhouse (choice)
16 26 Club (choice)
17 27 Wedge-bone sirloin (choice)
18 27 Round-bone sirloin (choice)
19 28 Double-bone sirloin (choice)
20 28 Pin-bone or hip-bone sirloin (choice)
21 29 First-cut round (good)
22 29 Center-cut round (good)
23 30 Lower part of round (good)
24 30 Flank (good)

Roasts

12 22 Meat thermometer
25 34 Standing rib (choice)
26 35 Rolled rib (choice)
27 35 “Hotel” style rib (choice)
28 35 Blade rib (choice)

Pot Roasts

29 36 Rump (good)
30 37 Chuck rib or blade (choice)
31 37 7-bone chuck (choice)
32 38 Shoulder arm (good)
33 39 Heel of round (choice)
34 39 Rib ends or short ribs (good)

Stew Meat

35 40 Plate roll (good)
36 41 Soup bones (good)

Government Grades of Carcass Beef

(Color plates)

12-13 Ribs: U. S. Choice, Good, Commercial, and Utility
32-33 Chucks: U. S. Choice, Good, Commercial, and Utility

The color photographs for these plates were made possible thru the cooperation of the U. S. Department of Agriculture. They were first reproduced in Illinois Station Bulletin 479, August, 1941.
FIVE RULES FOR BUYING BEEF

1. Buy at a dependable market. A good part of a customer's problem is solved when she finds a market that consistently handles the grade of meat which meets her demands. Most reliable butchers are glad to explain differences in cuts and grade and otherwise help their customers with their meat problems.

2. Buy government-inspected meat. Government inspection guarantees that the meat was from a healthy animal, was processed under sanitary conditions, and was fit for consumption when it left the packing house.

3. Buy by government grade if you are not able to recognize the grade you desire.

4. Learn to recognize grades. The best beef has a bright red lean, a white or creamy-white fat, and a fairly liberal dotting of the lean with particles of fat. Cuts from the lower grades have a dark lean, very little fat, and the fat is yellowish or bluish-gray. Between these two extremes are many gradations.

5. Choose meat suited to your purpose. Most people serve a higher grade of meat and a more palatable cut for a dinner party than for a family meal. Most housewives would not use sirloin for stewing meat, but it is just as out of place to try to broil a low-grade cut. The relative waste and price of different grades and cuts should be carefully considered.