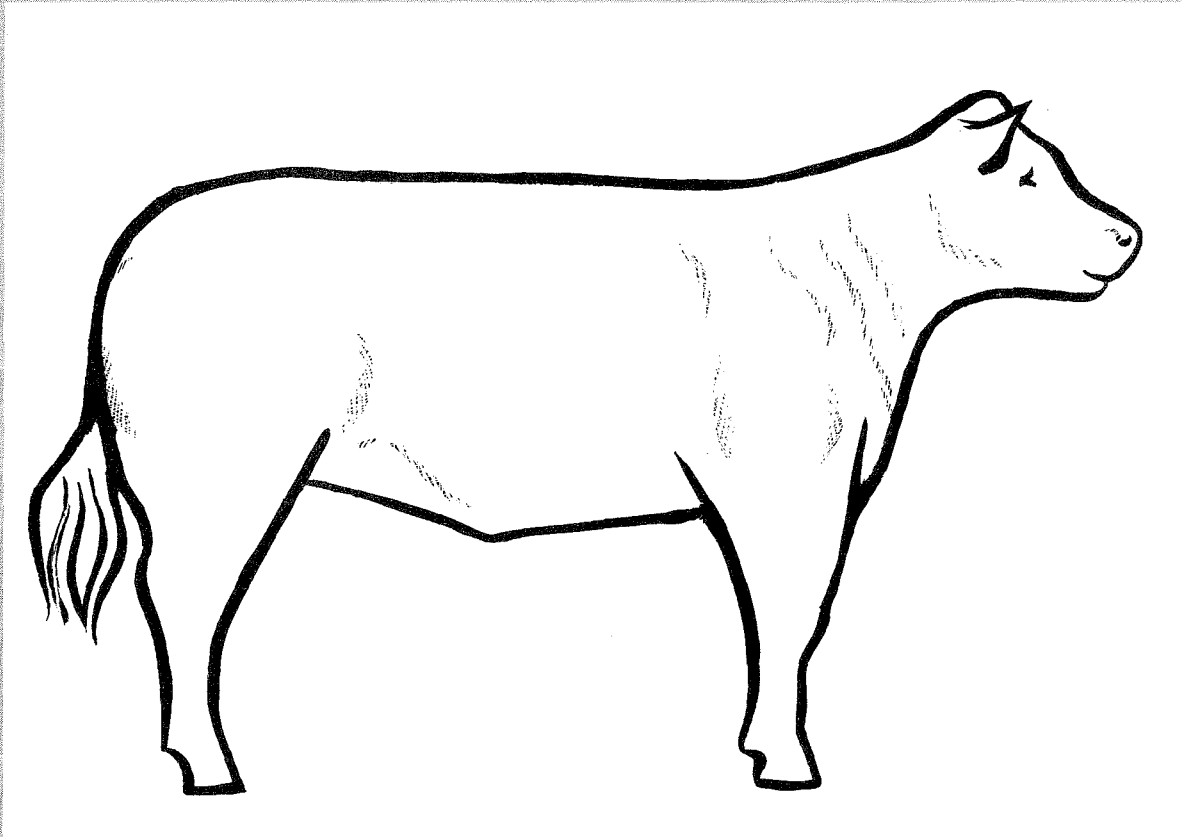


The Modern Beef Steer



Division of Agricultural Sciences
UNIVERSITY OF CALIFORNIA

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The authors are Farm Advisors Fremont ("Monte") L. Bell and Raymond G. Lyon, Glenn and Colusa Counties; and James T. Elings, formerly Extension Livestock Specialist, Davis.

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THE MODERN BEEF STEER

Can You Tell Muscle From Fat?

Rapid growth and muscling are the criteria for the meat-type steer. Muscling has to do with the animal's conformation or shape. Desirable conformation must increase production efficiency as well as improve cutability or meat yield. Some of the conformation points in the live animal that were considered important in the past have no relation to either cutability or production efficiency. There is no justification for a beef animal that is overfinished, excessively deep, short bodied, short legged, a slow gainer, or with a heavy brisket, deep flanks and twist.

All Fat Is Not Bad

In a beef carcass, excess fat greatly reduces the cutability or percent yield of closely trimmed retail cuts. However, under present marketing methods some fat or finish is required to minimize carcass shrinkage and maximize shelf life in the retail market display case.

A muscular, correctly finished steer can yield a carcass that is worth \$50 or more than an overfinished, average muscled steer or an underfinished, poorly muscled steer.

Judging the Modern Steer

The modern steer is muscular—a meat-type steer. He is efficient from the standpoint of rate of gain, and possesses carcass excellence. He is longer, less deep-bodied, trimmer through the middle, more upstanding, and less smooth than the old-fashioned steer. The meat-type steer shows muscling when viewed from any angle, plus the necessary minimum outside finish. Muscling is indicated by bulges and creases rather than the smoothness seen in the overfinished or the angularity seen in the less muscular steer.

The illustrations that follow show that what is desired in a muscular, correctly finished steer as compared to the average muscled, overfinished or the poorly muscled, underfinished steer.

The modern well-muscled steer stands wide when viewed from the front, has a minimum of brisket, and shows superior muscling as indicated by bulges in the forearm and the shoulders.

From the side, the meaty steer will appear trim through the middle and rather upstanding and may be cut up in the rear flank. The top line will be strong and will show muscle working when he moves—a bulge over the loin and another over the rump.

Viewed from the rear, the well-muscled steer will appear rounded over the loin and rump like a quonset hut, will bulge and be widest through the middle of the round, will be somewhat cut up in the twist but will carry muscling well down on the leg. He will stand wide and have the thickness of frame to carry the muscling required in today's modern steer.

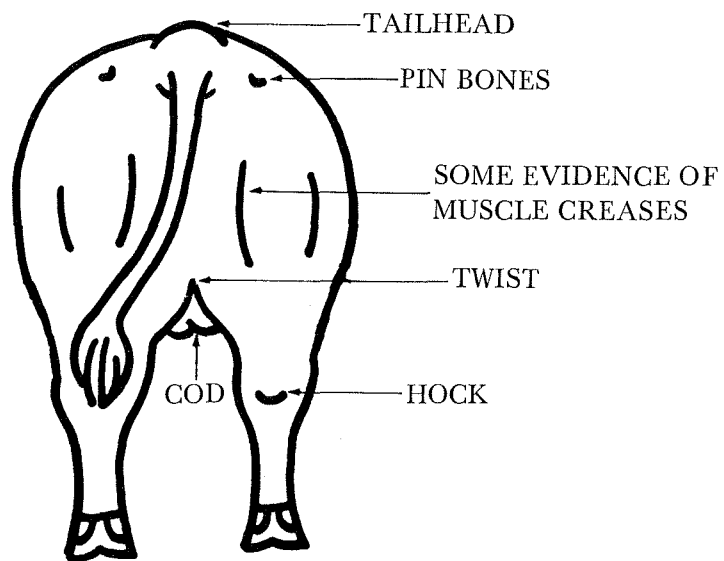
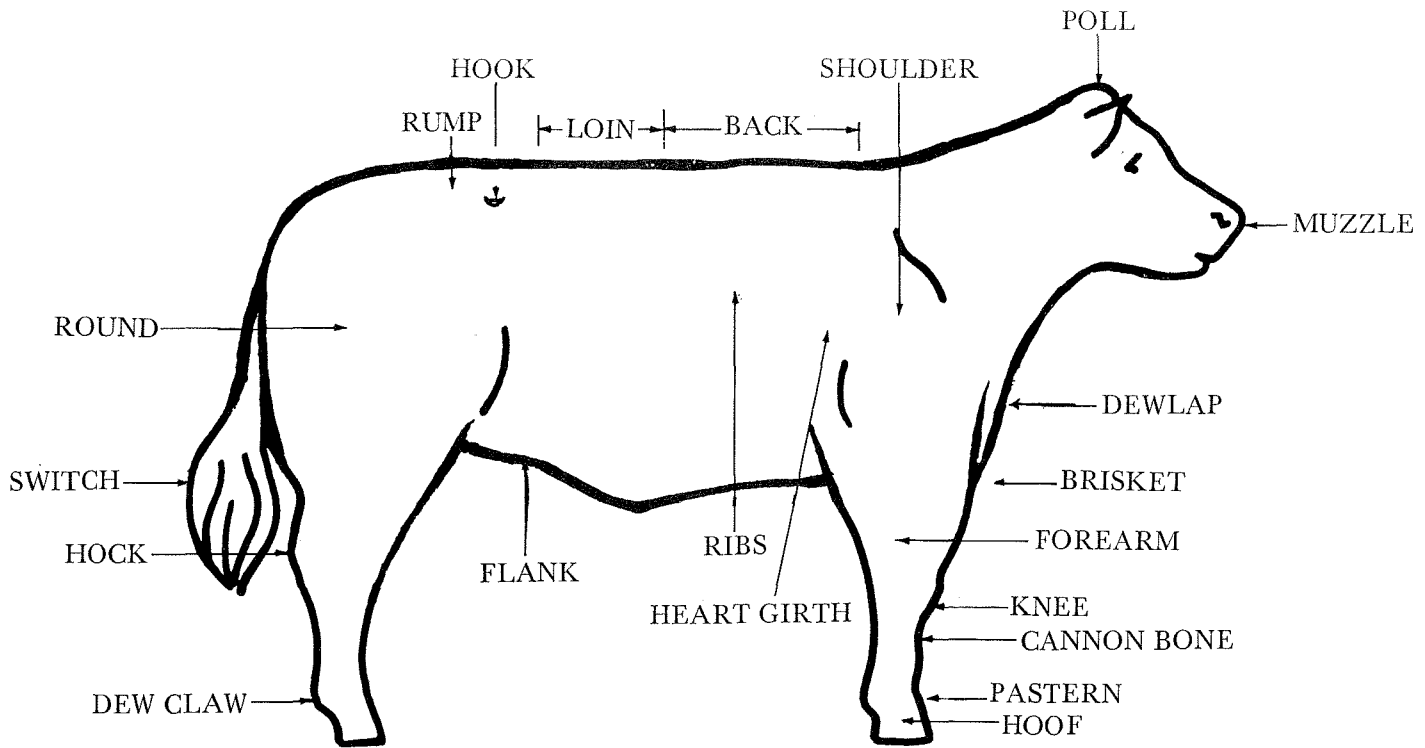
The successful judge of beef cattle, whether a 4-H member, cattleman, cattle feeder or cattle buyer, will identify and select muscular, efficient cattle that yield a high percentage of lean cuts of high-quality beef with little excess fat. Points of emphasis must be related to carcass value and production efficiency. There are some of these represented in most breeds of cattle.

The Modern Cow—Modern Bull

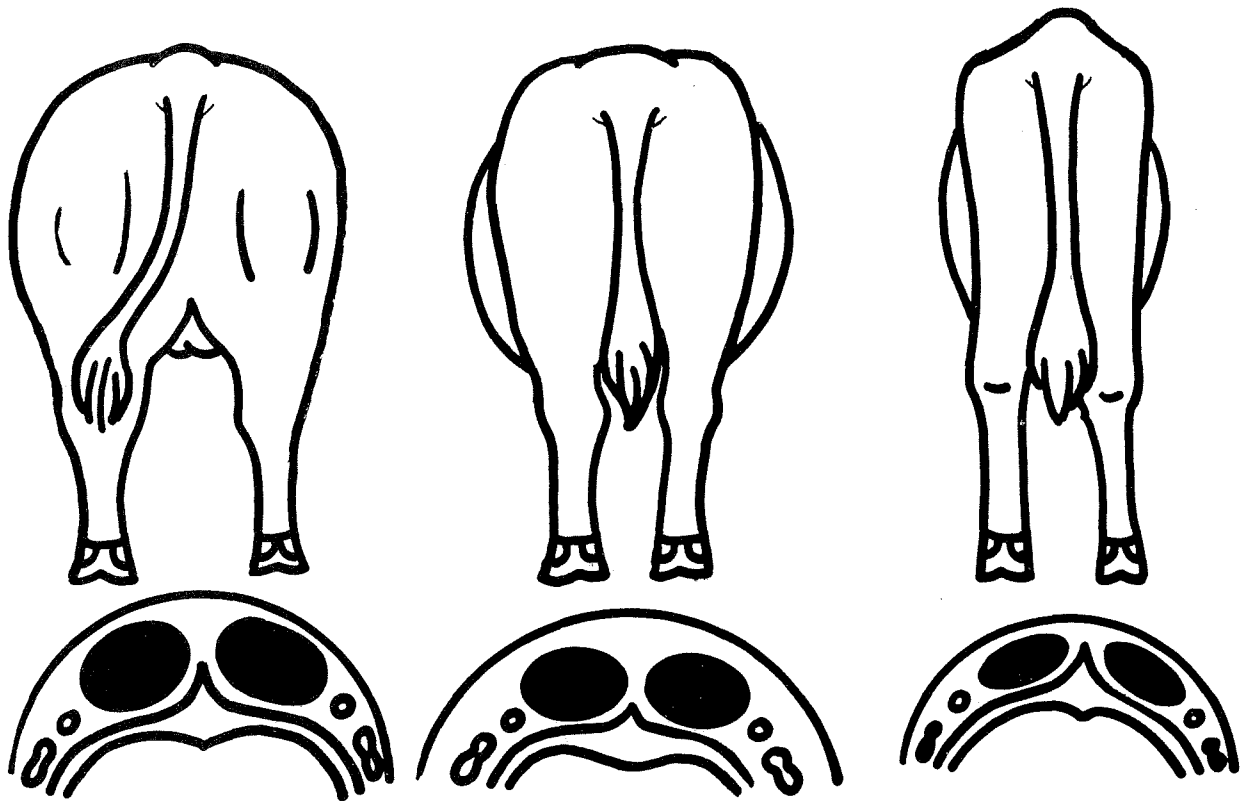
The modern steer is the image of the mother cow that raised him and the bull that sired him. Performance records, keen minds, and critical visual appraisal will hasten the changeover to the modern steer.

The modern cow has a feminine head and is a bit longer and leaner in the neck than the old-fashioned kind. She is longer bodied, not too deep, but stands wide front and rear on medium bone. Her udder is long from front to rear, well-attached and shows adequate capacity. She is correct on her feet and legs. She is selected on the basis of production records—her own and those of her dam.

The modern bull is massive and muscular with a strong, masculine head, prominent crest, and large testicles. He shows muscling in the forearm and shoulder, over the back and loin, the rump, and in the quarter. He is long and stands correctly with adequate width between the legs on heavy bone. He is selected on the basis of records with strong emphasis on rate of gain. Research has shown that muscling or cutability is positively correlated with rate of gain.



KNOW THE POINTS OF CONFORMATION



Muscular, correctly finished—

thick or widest through middle of the rounds. Wide at pins. Stands and walks wide on hindlegs. Wide, thick back, loin and rump with correct quonset shape (∩) or turn over top. Carries muscling well down on legs. Tailhead may be prominent—no excessive fat deposits. Muscle creases evident.

Large ribeye muscle with minimum covering of finish.

Average muscling, overfinished—

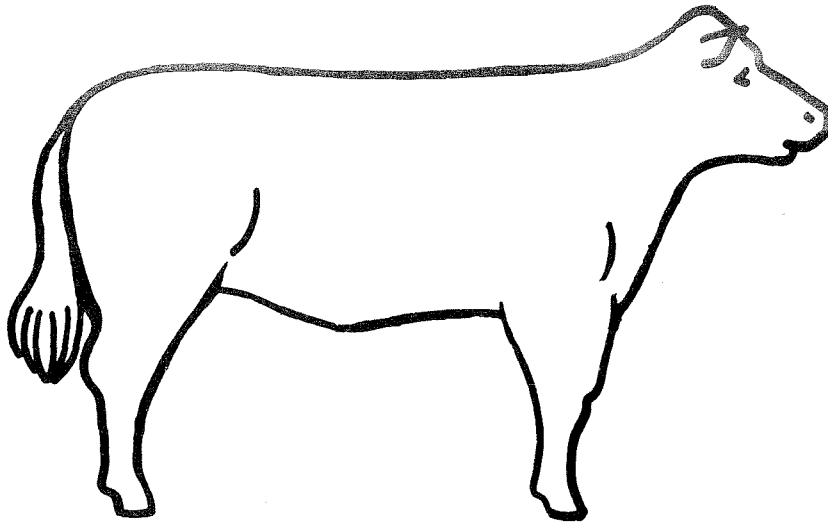
wide top but tapers in width from top to bottom of round. Lacks width between hindlegs. Full, deep twist denoting excess fat. Lacks muscle in middle round. Flatness over the rump and loin (∩) indicates lack of muscle and excessive finish.

Ribeye muscle is smaller with excessive finish.

Poorly muscled, underfinished—

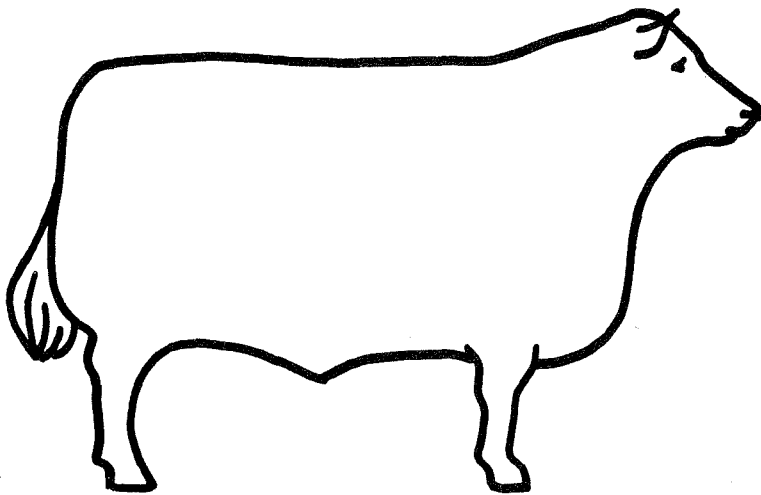
narrow, lacks thickness, flat tapering round. Narrow at pins and between hindlegs. Narrow rafter-shaped (∧) top. Prominent tailhead and hooks.

Small ribeye muscle with little or no finish.



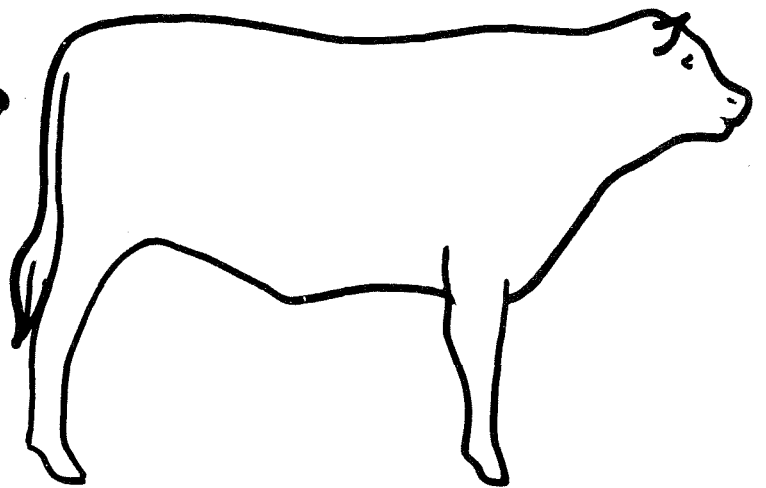
Muscular, correctly finished—

long bodied, longer legged. Clean, neat brisket and dewlap. Trim middle, moderate depth of body. Cut up in the rear flank. Long rump and round. Muscular shoulder and forearm. Round shows bulge midway down. Strong top with bulge over loin and rump.



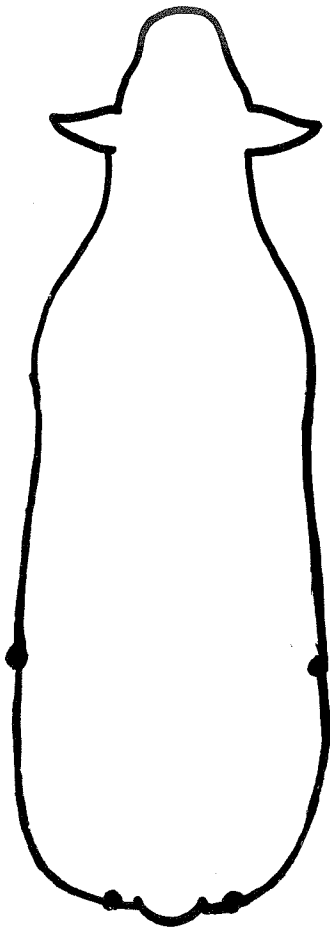
Average muscling, overfinished—

excessive depth of body, short bodied and short legged. Heavy, wastey brisket and rear flank. Average muscling in arm and forearm. Short rump and round. Bulge in lower round indicates excessive finish.



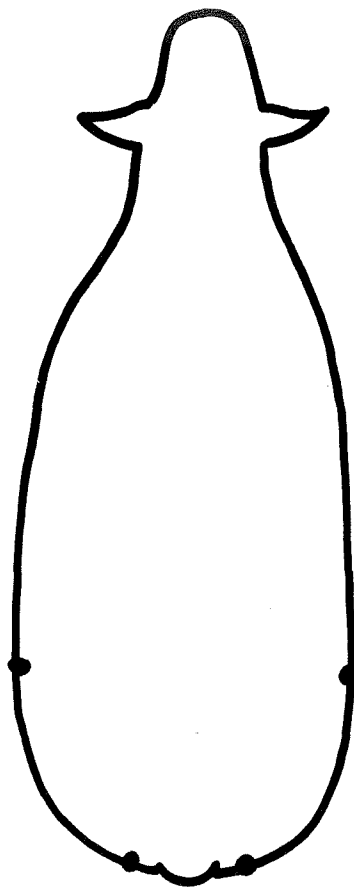
Poorly muscled, underfinished—

lacks muscling in the shoulder and forearm. Has an unbalanced, light hindquarter. Hooks, pins, and point of shoulder prominent.



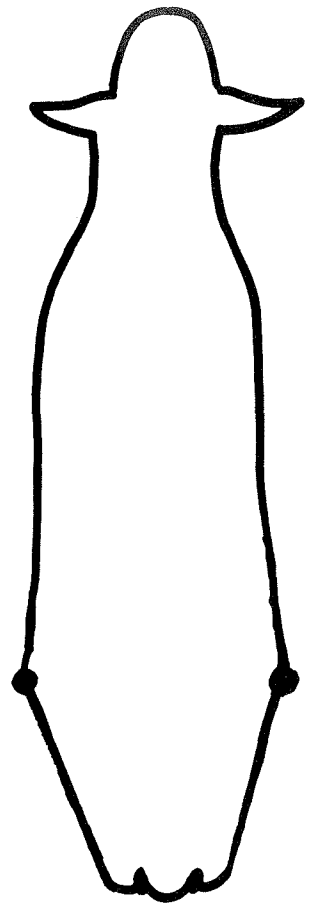
Muscular, correctly finished—

indicates muscling in the shoulder and is not full and smooth back of the shoulders. Shows length through the back and from the hooks to the pins. Thickest through the rear quarters.



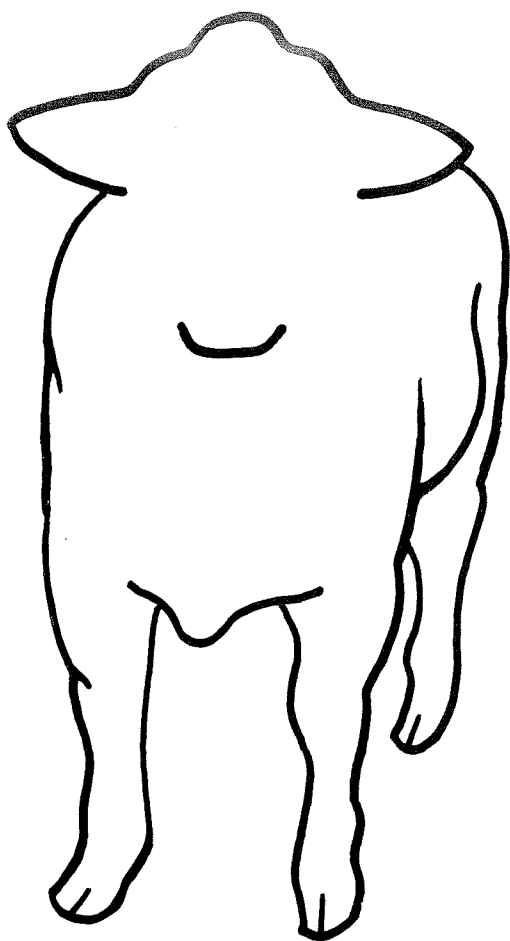
Average muscling, overfinished—

uniform thickness from front to rear. Does not exhibit much muscling in the shoulder area. Excessive fat over the forerib and shoulder. Close coupled, widest in the middle of the body, short rumped.



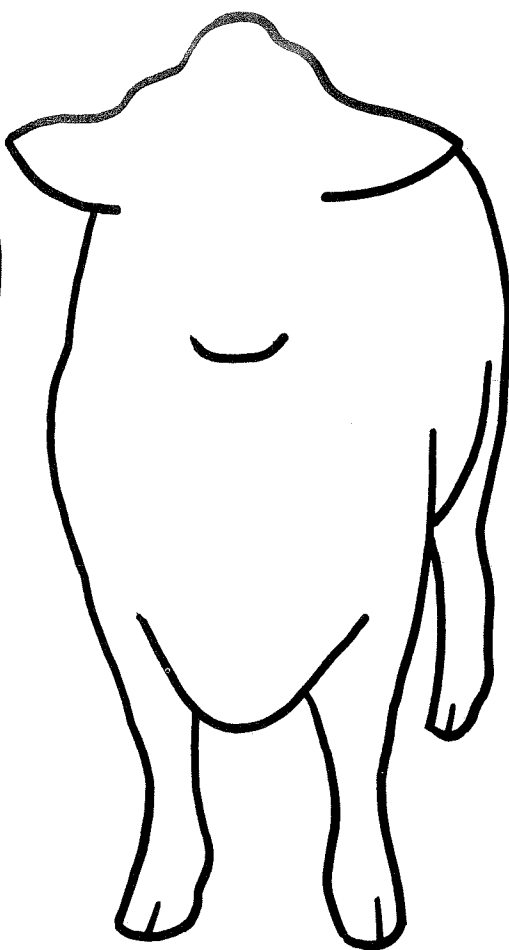
Poorly muscled, underfinished—

lacks muscling in the shoulder. Lacks thickness through the loin and rump. Short, drooping rump. Narrow at the pins.



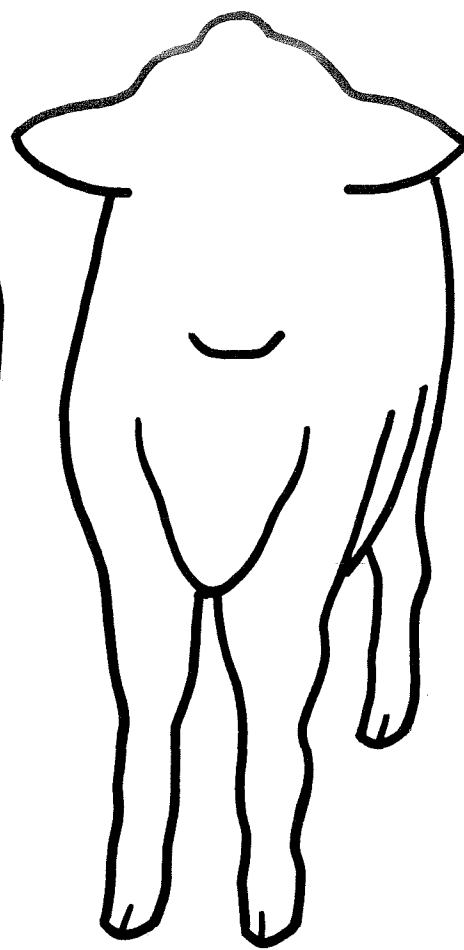
Muscular, correctly finished—

shows muscle in shoulder and forearm by bulges. Trim brisquet and dewlap. No excessive finish. Wide between the front legs.



Average muscling, overfinished—

smoothness over shoulder indicates lack of muscling. Small forearm. Heavy, wastey brisquet denoting excessive finish. Slightly narrow between the front legs.

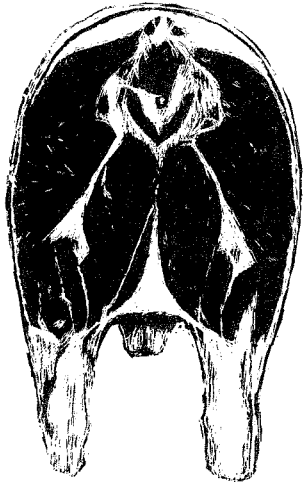


Poorly muscled, underfinished—

lacks muscling in the forearm and shoulder. Narrow through the shoulders. Narrow between the front legs.

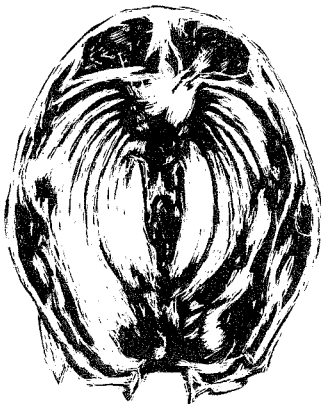
These cross sections of frozen steer carcasses illustrate the superior muscling of the modern steer (left) compared to the lack of muscling and extreme finish of the old-fashioned steer (right).

Modern Steer



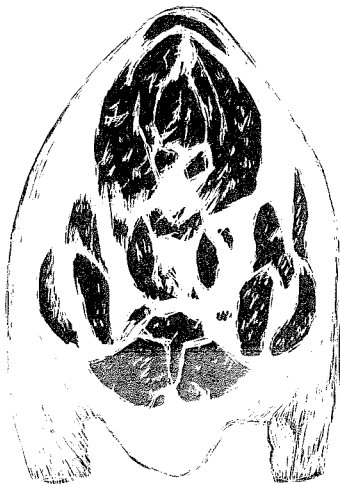
The cross section of the rear quarters of the modern steer has a more rounded appearance over the top and down the side of the round. It shows less finish on the top and less intermuscular fat.

The old-fashioned steer is characterized by its extreme fat cover, large deposits of fat between muscles and in the twist, and fatness on top and down the side of the round.



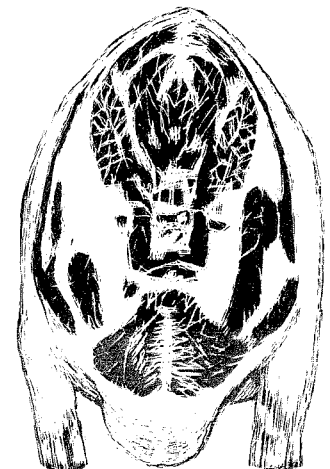
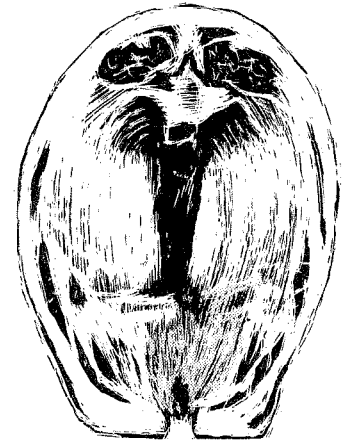
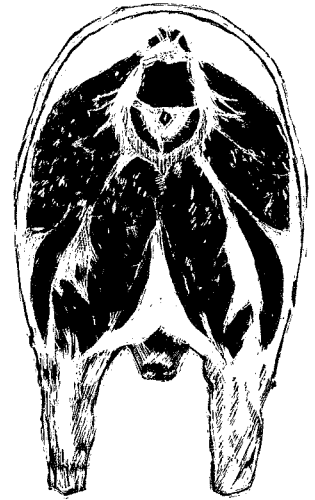
The cross section through the rib-eye area shows a larger ribeye area in the modern steer as well as more muscling down the side of the body and less overall fat cover.

The old-fashioned steer has a smaller ribeye, less total muscle, and an excess of outside finish.



The cross section through the shoulder and chuck again points up the superior muscling of the modern steer as compared to the old-fashioned steer. The modern steer also has a trimmer brisket with less fat.

Old-Fashioned Steer



Facts About a Typical Beef Carcass

- * A beef carcass can be physically separated into three portions: fat, muscle, and bone.
- * A present-day beef carcass is about 30 percent fat, 55 percent muscle, and 15 percent bone.
- * Most of the separable fat is found under the skin and the rest found around the kidneys, in the pelvic region, and between the muscles.
- * Additional fat is deposited in very small particles through the muscles and cannot be separated. These flecks of fat are called marbling.
- * Separable muscle contains 15 to 20 percent protein, 5 to 30 percent fat, and 50 to 75 percent water. The proportion of water decreases as an animal fattens.
- * Even bone may contain 45 percent water and 10 percent fat.
- * The amount and distribution of fat depends upon nutritional state, breed, and physiological age of animal.

Facts About U.S.D.A. Quality Grade

- * The degree of marbling (flecks of fat) in the ribeye muscle between the 12th and 13th rib and, to a much lesser extent, the firmness of the meat in relation to maturity of a beef carcass determines the U.S.D.A. quality grade. Conformation (shape) is no longer considered in determining grade.
- * The more marbling there is, the higher the U.S.D.A. quality grade.
- * Carcasses from older animals (showing more maturity) require more marbling to reach the same grade compared to younger-appearing carcasses.
- * A certain amount of fat around and within muscles is necessary to make the cuts of meat firm. Fat is also needed to reduce shrinkage and spoilage, and maintain shelf life except when cuts are vacuum-wrapped in plastic.
- * Fat affects the palatability or eating qualities of meat. It is associated with juiciness, flavor, texture, and, to some extent, tenderness of meat.
- * Tenderness is influenced most by age, with younger animals having the most tender meat. Aging the meat also increases tenderness and accentuates flavor.

Facts About Dressing Percent

- * Dressing is the removing of the hide, head, tail, lower legs, blood, organs (except kidney), and the gastrointestinal tract and its contents at slaughtering time.
- * Dressing percent is the percent of the live animal weight remaining in the carcass after slaughter and dressing. The formula for figuring dressing percent is—

$$\frac{\text{carcass weight}}{\text{live weight}} \times 100 \quad \text{example: } \frac{600 \text{ lbs}}{1,000 \text{ lbs}} = .60 \times 100 = 60\%$$
- * The carcass is the part of the animal that is left after slaughter. The whole carcass or the carcass cut into primal cuts (round, loin, rib, chuck) is sold to the retail meat market.
- * Dressing percent increases as an animal fattens because weight is added to the carcass without added growth of muscle, bone, and internal organs. In other words, the carcass weight increases much more than the weight of the removed parts called offal (off-all).
- * The dressing percent of a Choice steer is usually 60 percent or slightly higher. It is affected by degree of finish, weighing conditions, body fill, mud, etc.
- * The packer can pay a higher price per pound for a live steer with a higher dressing percent—unless the steer with the high dressing percent has so much waste fat that the carcass must be sold to the retailer for a lower price.
- * If a carcass is worth 90 cents per pound, each 1 percent increase in dressing percent is worth 90 cents per cwt (hundredweight) increase in the live price.

EFFECT OF DRESSING PERCENT ON LIVE VALUE

	Steer A	Steer B
Live weight	1,000 lb	1,000 lb
Parts removed (offal)	- 400	- 380
Carcass weight	600 lb	620 lb
Dressing percent	60%	62%
Carcass value @ 90 /lb	\$540.00	\$558.00
Hide and offal value	50.00	50.00
Live steer value* before	\$590.00	608.00
deducting slaughter costs and profit	(\$59.00/cwt)	(\$60.80/cwt)

* Based only on dressing percent, Steer A is worth \$18.00 less than Steer B.

Facts About Cutability Percent

- * Cutability percent is described by both the U.S.D.A. and the meat trade by yield grades. Yield grade 1 is leanest, 5 is fattest.
- * Retail cuts are those cuts of meats that the consumer buys at the meat counter.
- * Cutability percent is the percent of carcass weight remaining in retail cuts after cutting and trimming the carcass.
- * As an animal fattens, cutability percent decreases because excess fat is trimmed from retail cuts.
- * A retailer can pay a higher price per pound for a carcass with a higher cutability percent providing the quality is the same.
- * High cutability beef should yield at least 70 percent of the carcass in total trimmed, boneless retail cuts and 50 percent or more trimmed, boneless major cuts from round, loin, rib, and chuck.
- * The amount of fat is the most important factor in determining cutability differences among carcasses.

EFFECT OF YIELD GRADE (CUTABILITY PERCENT) ON CARCASS AND LIVE VALUE

		Steer A		Steer B
Live weight		1,000 lb		1,000 lb
Dressing percent		60%		62%
Carcass weight		600 lb		620 lb
Yield grade		2		4
Major cuts	@ 51%	306 lb	@ 46%	285 lb
Minor cuts	@ 22	132	@ 19	118
Fat, bone, waste	@ 27	162	@ 35	217
Total	100%	600 lb	100%	620 lb
Major cuts value	@ \$1.40	\$428.40		\$399.00
Minor cuts value	@ 1.02	134.64		120.36
Fat, bone, waste	@ .04	6.48		8.68
Carcass value before deducting cutting costs and profit		\$569.52 (\$94.92/cwt)		\$528.04 (\$85.17/cwt)
Hide and offal value		\$ 50.00		\$ 50.00
Live steer value* before deducting costs and profits		\$619.52 (\$61.95/cwt)		578.04 (\$57.80/cwt)

* Based on dressing percent and cutability, Steer A is worth \$41.48 more than Steer B.

Growth and Carcass Requirements of the Modern Steer

The modern steer produces consumer preferred beef and is a moneymaker for the breeder, feeder, and retailer.

Requirements of the modern steer under optimum growth conditions—

- * Produced by sound, highly fertile brood stock.
- * Birth weight and size to allow easy calving (5% to 7% of mature weight).
- * Wean heavy enough to go directly to feedlot (600 lb or more at 7 to 8 months).
- * Gain rapidly in the feedlot (3 lb/day).
- * Gain efficiently in the feedlot (6 lb feed/1 lb gain).
- * Have a dressing percent of at least 60 percent.
- * Have ribeye area that measures 12 square inches or more on a 1,000-pound steer.
- * Have a maximum of .45 inch of back fat over the ribeye on a 1,000-pound steer.
- * Have no more than 2.5 percent of the carcass weight in the form of kidney knob, heart fat, and pelvic fat.
- * Grade U.S.D.A. Choice, the carcass most acceptable to the California market.
- * “A” maturity (young) group.
- * A modest amount of marbling.

- * Meat has fine texture, bright cherry-red color and is firm.
- * Sixty percent or more of the carcass in boneless lean.
- * Over 50 percent of carcass weight in boneless, closely trimmed retail cuts from round, loin, rib, and chuck (yield grade 2).
- * Carcass weight per day of age:

	Desirable	Possible
Heifers	1.2 lb	1.4 lb
Steers	1.4 lb	1.6 lb
Bulls	1.6 lb	1.8 lb

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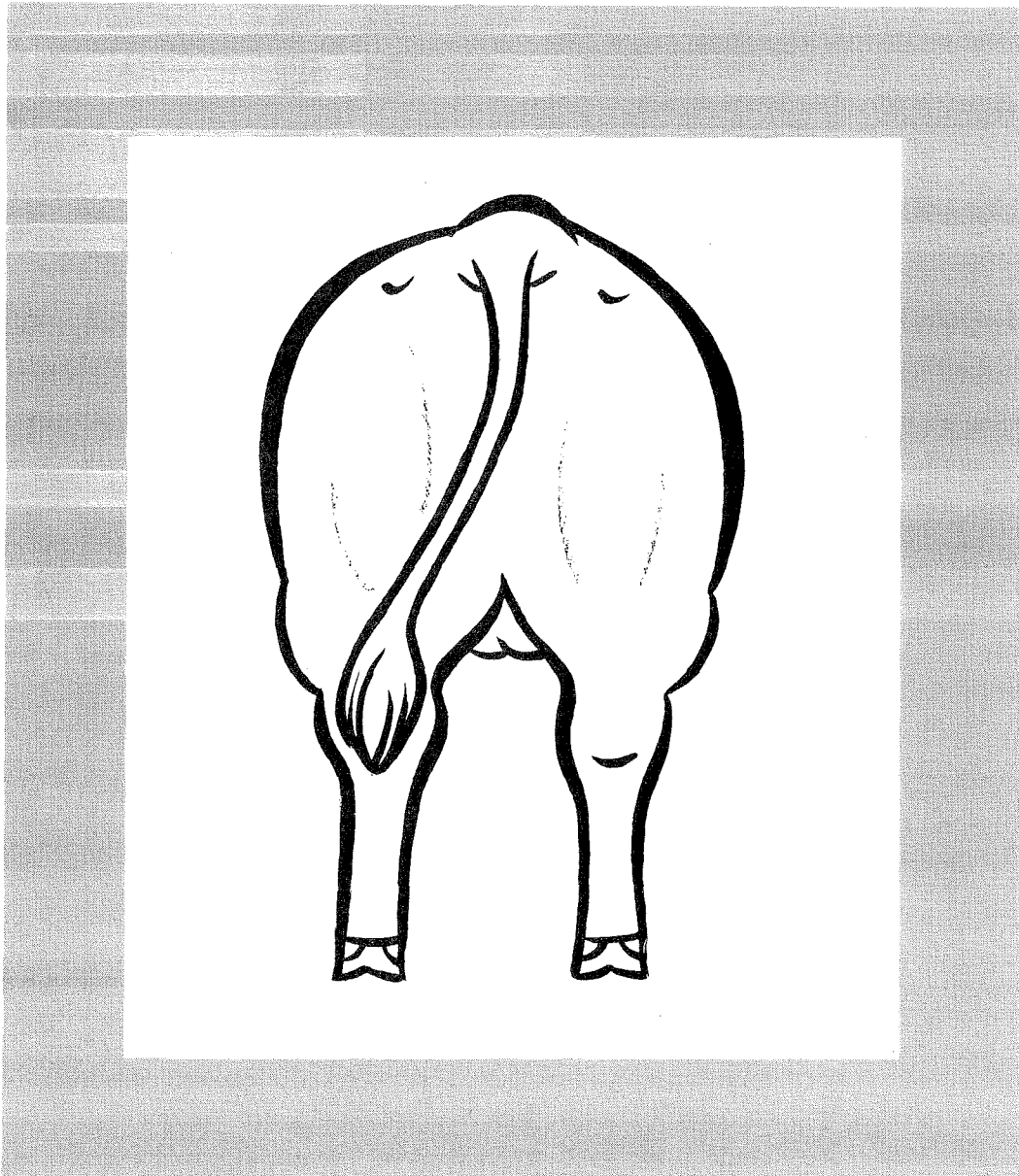
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