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BEEF CATTLE OF THE FUTURE: SEARCH FOR THE IDEAL STEER

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Before we begin our search for the ideal steer, I would like to reflect on where the beef industry is today and where it may be headed in the near future. My mission is to set the stage for this conference by reviewing the current status of our industry and by challenging you with some alternatives for the future.

Improving Efficiency of Beef Production

During the past several years, the beef industry has found itself mired down in an ironic and perplexing situation. Economically, we have barely been hanging on in spite of the fact that the retail price of beef is high relative to the price of other major meat items. This is illustrated in table 1, which shows that chicken has declined from 80% of the price of beef in 1950 down to 30% in 1981. Pork has not changed much--ranging from about 2/3 to 3/4 of the price of beef throughout this 31-year period. Most industry analysts would agree that the cost of producing beef is high relative to the cost of producing other protein foods such as pork, poultry meat, eggs, etc. If beef is to retain its share of the protein market, it appears that we will have to improve our efficiency so as to reduce production costs. This raises a pertinent question: "Where do our present inefficiencies lie?"

TABLE 1. RETAIL PRICES OF BEEF, PORK AND CHICKEN

Year	As percent of beef price	
	Pork	Chicken
1950	72	80
1960	67	51
1970	75	41
1981	64	30

Table 2 lists those major constraints which, in my opinion, are a roadblock to more efficient and profitable beef production. First of all, our current systems take too long to produce the final product, which results in extremely high interest charges. A second problem is that nearly 70% of the dietary energy expended in producing beef goes to maintenance and only 30% goes to production. Third, the live animal and the beef it produces is transported too many miles before it is consumed, resulting in high trucking costs as well as losses in the form of shrink, morbidity and mortality. Fourth, the feeder is encouraged to overfatten cattle to ensure Choice grade so as to maximize selling price, in spite of the fact that research has shown the relationship between marbling and palatability is low.

Table 3 illustrates the relatively inefficient use of dietary energy in a beef cow herd up to weaning time. The four studies cited indicate that 75 to 80% of the TDN consumed is used for maintenance and only 20 to 25% for productive purposes. In an integrated enterprise, in which the calf is fed from weaning to slaughter without backgrounding, the average amount of TDN used for production is increased to about 32%. It is only fair to point out, however, that much of the TDN used for the maintenance of a beef cow is provided in the form of fibrous feeds that would otherwise go unutilized.

Up to this point, the relative inefficiencies and lack of profitability in the industry have been considered. The logical question that follows is: "What can be done to change it?" Presumably, significant cutbacks in the national cow herd would eventually reduce supplies of beef and force prices up to profitable levels on a long-term basis. However, this action can no longer be considered a permanent cure for the ills that plague the industry, because cost of production may have gone beyond what the consumer is willing to pay for beef. Instead, I believe the industry must reorganize its thinking and make some far-reaching changes so as to improve the efficiency of producing the product. Table 4 lists those areas that appear to deserve attention.

TABLE 2. CONSTRAINTS ON BEEF PRODUCTION EFFICIENCY

Constraint
(1) Long production cycle coupled with high interest rates.
(2) Nearly 70% of dietary energy is for maintenance.
(3) Transportation and associated costs:
(a) Trucking
(b) Shrink
(c) Morbidity
(d) Mortality
(4) High degree of fatness to ensure Choice grade.

TABLE 3. TOTAL DIGESTIBLE NUTRIENT (TDN) USAGE IN COW-CALF HERDS^a

Reference	Usage	
	Maintenance	Production
	% of total	
Klosterman & Parker (1976)	74.6	25.4
Wyatt <i>et al.</i> (1977)	74.0	26.0
Martin & McReynolds (1979)	75.9	24.1
Brown & Dinkel (1978)	80.8	19.2

^aBased on data from references cited.

TABLE 4. IMPROVING EFFICIENCY OF BEEF PRODUCTION

Possible steps
(1) Dilute maintenance costs: sell more weight per cow.
(2) If possible, retain ownership of calves to slaughter.
(3) Reduce time on feed to minimum needed for acceptable palatability.
(4) Reduce emphasis on marbling; stress lean growth.
(5) Fine-tune the trade-off between lean growth and:
(a) More energy to maintain fertility
(b) Dystocia
(6) Adopt new technology in processing and merchandising beef.

Of the total TDN expended in producing beef, 55% goes just to maintain the breeding cow herd. In order to dilute this cost, cow-calf producers must be in a position in the years ahead to sell more pounds of calf per cow exposed. One possible means of accomplishing this would be to retain ownership of the calves until slaughter. In many operations, however, this may not be possible from a

cash-flow standpoint. In an integrated system, calves should be high performers in order to minimize time on feed and interest charges. Retaining ownership and feeding them on the home place, or nearby, would help eliminate some of the present transportation costs, shrinkage, disease and death loss.

At the risk of lowering meat quality, I feel it is imperative that we reduce the present emphasis on marbling, place greater emphasis on lean growth and transform ourselves into a generation of protein producers instead of fat producers. This metamorphosis may be a painful one for our tradition-bound beef industry, but I believe it will come to pass. This change would permit us to feed calves with high genetic potential for lean growth to acceptable carcass weights without their becoming excessively fat.

If the industry moves in the direction of producing calves with a higher propensity for lean growth, potential problems do exist along the way; primarily more energy to maintain fertility and a higher incidence of dystocia. I am cautiously optimistic that we can somehow select, mate and manage our way around these important problems.

Adoption of new technology in the processing and merchandising of the carcass could perhaps do more to lower the retail cost of beef than anything we could do in the production of the live animal.

Search for the Ideal Cow

In our quest to improve production efficiency in the cow-calf segment of the industry, we are logically led on a search for the ideal cow and the ideal bull with which to mate her, so that we may generate the ideal steer. Regarding mating systems, there are fewer reasons all the time for not crossbreeding. At one time, it was recommended that smaller, part-time producers with limited resources should probably stay with straight breeding because crossing systems may be too complex for them to carry out. Turning away from the 10 to 25% improvement in efficiency that can be harvested from heterosis is too high a price to pay for remaining simple and uncomplicated. The advantages of the crossbred

female have been well researched and documented, but in a recent survey of cow-calf producers in the northeastern quarter of the United States, only 21% of the respondents reported having crossbred herds (Schwab and Garst, 1976). Gosey (1979), and Gregory and Cundiff (1980) as well as other workers have described effective crossbreeding programs for producers with limited time and resources that still maintain a high percentage of maximum possible heterosis. These programs should be brought to the attention of smaller herd owners.

If we can agree that the ideal cow probably ought to be a crossbred, the next question is: What size and how much milk? Prior to 1967, only limited data were available on the relationships between cow size, milking ability and efficiency. Since then, a number of important studies have shed light on this subject. Table 5 is a summary of how these studies have expressed biological efficiency. They range all the way from calf weight per cow at weaning time to cow and calf energy consumption per unit of edible portion. It should be stressed that these are measures of biological efficiency. In recent years, a number of comprehensive computer simulation studies have evaluated economic efficiency. These simulation models have attempted to

TABLE 5. EXPRESSING BEEF COW BIOLOGICAL EFFICIENCY

Expression of Efficiency

- (1) Weaning weight/cow at weaning.
 - (2) Weaning weight/cow calving.
 - (3) Weaning weight/cow wintered.
 - (4) Weaning weight/cow exposed.
 - (5) Cow + calf TDN/weaning weight.
 - (6) Cow + calf TDN/yearling or slaughter weight.
 - (7) Cow + calf TDN/edible portion weight.
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account for all inputs and outputs, including feed for replacements and cull cow salvage value.

The largest body of genetic data has been generated from the Germ Plasm Evaluation Program at the U.S. Meat Animal Research Center (MARC). Table 6

summarizes weaning weight and retail product weight from F_1 steer progeny out of Hereford and Angus dams during Cycles I, II and III of the program. Except for Jersey sired calves, there was not much difference between sire breeds in weaning weight per cow calving. However, in terms of pounds of retail product produced per cow calving, the large, lean Continental breeds excelled the others. Table 7 shows the estimated profit per cow in Cycle I when steer progeny were fed to the same carcass grade (Smith, 1976). Cows mated to Limousin, Simmental and Charolais sires made the most profit in these comparisons.

Table 8 summarizes data on F_1 crossbred cows in Cycle I at U.S. MARC. Weaning weight produced per cow exposed was very similar, with a slight advantage for the Simmental cross cows. Using body weights and milk production data reported for these cows (Laster et al., 1979), I estimated annual TDN consumption, based on NRC (1976) allowances. Differences in estimated TDN consumption per pound of weaning weight per cow exposed are small, although there is a slight tendency for the Angus-Hereford cross cows to be more efficient.

Table 9 presents a comparable set of data for F_1 cross cows in Cycle II at TABLE 6. PRODUCTIVITY OF F_1 MATINGS, U.S. MARC^a

Breed of steer (Hereford & Angus dams)	Weight/cow calving	
	Weaning	Retail product
	Trait ratio	
HA & AH	100	100
Jersey-X	90	87
South Devon-X	95	100
Limousin-X	96	105
Simmental-X	96	104
Charolais-X	95	104
Red Poll-X	100	98
Brown Swiss-X	105	111
Gelbvieh-X	101	107
Maine-Anjou-X	98	109
Chianina-X	99	112
Brahman-X	102	105
Sahiwal-X	97	97
Pinzgauer-X	100	101
Tarentaise-X	100	103

^a Cundiff et al., (1980).

TABLE 7. PROFITABILITY OF F₁ MATINGS, U.S. MARC^a

Breed of calf (Here. & Angus dams)	Profit/cow when progeny fed to constant carcass grade endpoint, \$
HH & AA	50
HA & AH	59
Jersey-X	36
South Devon-X	63
Limousin-X	89
Simmental-X	86
Charolais-X	90

^a Smith (1976).

TABLE 8. SUMMARY OF 7 CALF CROPS, CYCLE I - U.S. MARC^a

Breed of cow	Est. annual TDN, lb	Wean. wt. per cow exposed lb	TDN per wean. wt., lb
Angus x Hereford	4203	380	11.1
Jersey-X	4382	389	11.3
South Devon-X	4410	383	11.5
Limousin-X	4233	369	11.5
Simmental-X	4735	399	11.9
Charolais-X	4458	373	11.9

^a Based on data from NRC (1976), Laster *et al.*, (1979), and Cundiff *et al.* (1981).

TABLE 9. SUMMARY OF 6 CALF CROPS, CYCLE II, U.S. MARC^a

Breed of cow	Est. annual TDN, lb.	Wean. wt. per cow exposed lb	TDN per wean. wt., lb
Angus x Hereford	4147	370	11.2
Red Poll-X	4343	363	12.0
Brown Swiss-X	4679	441	10.6
Gelbvieh-X	4679	448	10.4
Maine Anjou-X	4637	424	10.9
Chianina-X	4668	424	11.0

^a Based on data from NRC (1976), Laster et al., (1979), and Cundiff et al. (1981).

U.S. MARC (Cundiff et al., 1981). In this study, Gelbvieh and Brown Swiss cross cows were more efficient than the other crossbred groups with respect to either calf weight per cow exposed or estimated TDN required per pound of weaning weight.

Table 10 is summary of data from Cycle III at Clay Center in which Pinzgauer, Tarentaise, Brahman and Sahiwal F₁ cross cows were compared with Angus-Hereford controls. Both groups of Zebu cross cows - the Brahman and Sahiwal - were slightly more efficient than the British and Continental crosses.

Table 11 is taken from an extensive Canadian project involving 1150 cows at two locations for eight calf crops (Rahnefeld et al., 1980). Weight of calf weaned per cow exposed is used here as the measure of efficiency. Five groups of cows stand out in this study: Simmental-Shorthorn, Simmental-Angus, Charolais-Shorthorn, Simmental-Hereford and Charolais-Angus.

Table 12 is a progress report from a study involving 4,329 matings over 6 years at five locations in Virginia (Marlowe and Oliver, 1979). In terms of weaning weight per cow exposed, the Holstein crosses were clearly superior to all other crosses and straightbreds.

Magee (1979, 1981) reported similar results in a selection study in which Holstein blood was used in one of four breeding groups. Table 13 shows that the rotational cross group with Holstein blood weaned more calf weight and more retail cut weight per cow exposed than another rotational cross group and two straightbred Hereford groups.

TABLE 10. SUMMARY OF 4 CALF CROPS, CYCLE III, U.S. MARC^a

Breed of cow	Est. annual TDN, lb	Wean. wt. per cow exposed lb	TDN per wean wt., lb
Angus x Hereford	4035	335	12.0
Pinzgauer-X	4438	370	12.0
Tarentaise-X	4415	367	12.0
Brahman-X	4595	411	11.2
Sahiwal-X	4455	403	11.1

^a Based on data from NRC (1976), Laster et al. (1979), and Cundiff et al. (1981).

Table 14 is a summary of data taken from a project at the Oklahoma Station (Wyatt et al., 1977; Totusek, 1981). In this study, Herefords, Holsteins and

TABLE 11. CALF WEIGHT WEANED PER COW EXPOSED^a

Breed of cow	Trait ratio (Hereford x Angus = 100)
Simmental x Shorthorn	111
Simmental-Angus	111
Charolais x Shorthorn	110
Simmental x Hereford	108
Charolais x Angus	108
Charolais x Hereford	102
Limousin x Shorthorn	101
Limousin x Angus	101
Hereford x Angus	100
Limousin x Hereford	92

^a Rahnefeld et al. (1980).

TABLE 12. SUMMARY OF 4,329 BEEF COW MATINGS (1972-78)

Breed of cow	Calves weaned/100 cows exposed	Wean wt./cow exposed, lb
Straightbreds	73.5	295
All crosses	79.0	377
Holstein crosses	83.9	410

^a Marlowe and Oliver (1979).

TABLE 13. STRAIGHT BREEDING VS. ROTATIONAL CROSSING ^a

Breeding group	11th calf crop (1978)	
	Calf wt. weaned per cow exposed	Retail cuts/cow exposed
	Trait Ratio	
Unselected Hereford	100	100
Selected Hereford	115	117
Sim X Char X Ang X Her	135	139
Sim X Hol X Ang X Her	173	151

^a Magee (1979, 1981).

TABLE 14. EFFICIENCY OF HOLSTEIN AND HOLSTEIN-X COWS

Breed of cow	Energy level	Cow & calf TDN, lb	Wean wt. per cow exposed, lb	TDN per wean. wt., lb
Hereford	Mod	4370	503	8.7
Hereford	Hi	4597	494	9.3
Her x Hol	Mod	4721	494	9.6
Her x Hol	Hi	4858	538	9.0
Holstein	Mod	5149	478	10.8
Holstein	Hi	5539	545	10.2
Holstein	Very Hi	5629	624	9.0

^a Based on data from Wyatt *et al.* (1977) and Totusek (1981).

the crosses thereof were compared at various levels of dietary energy. The important observation that came out of this work was that efficiency, when expressed as TDN consumed per unit of weaning weight, was similar if each group was fed according to its potential level of production. For straight Herefords, the proper TDN level was moderate, for Hereford-Holstein crosses, it was high, and for straight Holsteins the correct level of energy was very high.

Table 15 summarizes the results of a study by Bowden (1980) in which he measured megacalories (Mcal) of digestible energy intake by both the cow and calf in four crossbred groups. There were no significant differences in Mcal required per kilo of calf weaning weight.

In an integrated beef enterprise in which the progeny are fed out for slaughter, an important measure of efficiency would be the amount of feed energy consumed per weight of edible portion produced. The classical work of Klosterman and Parker (1976) is summarized in table 16. They found no significant differences in TDN per unit of edible portion between the four breeding groups compared.

Table 17 summarizes comparable research from South Dakota (Brown and Dinkel, 1978), where the results were similar to the Ohio work in that there were no differences in TDN consumed per unit of edible portion between Angus, Charolais and their reciprocal crosses. Table 18 shows a third study of this kind, reported by Martin and McReynolds (1979), in which three groups of F_1 cross cows were compared: Hereford-Angus, Jersey-Angus and Simmental-Angus. In terms of TDN consumed per unit of edible portion, the differences between breeding groups were small, although there was a tendency for the Hereford-Angus cows to be slightly less efficient than the other two groups.

Since 1975, a number of research teams have used computer simulation models to predict the economic efficiency of various breeding, management and marketing systems in beef herds (Long et al., 1975; Morris and Wilton,

TABLE 15. CONVERSION OF DIGESTIBLE ENERGY^a

Breed of dam	Mcal DE/kg calf wean. wt.	
	Dam	Dam + calf
	Mcal	
Simmental X Angus	20.7	23.9
Charolais X Angus	20.8	24.8
Hereford X Angus	20.2	24.1
Jersey X Angus	20.5	23.6

^a Bowden (1980).

TABLE 16. EFFICIENCY, BIRTH TO SLAUGHTER^a

Breed of cow	TDN/ wean. wt.	TDN/ feedlot gain	TDN/ slaughter wt.	TDN/ edible portion
	lb			
Hereford	10.1	5.1	7.1	17.4
Ang X Her	8.6	5.4	6.9	17.0
Char X Her	10.0	5.1	7.1	17.3
Charolais	9.2	5.3	7.0	17.1

^a Klosterman and Parker (1976).

TABLE 17. EFFICIENCY, BIRTH TO SLAUGHTER^a

Breed of cow	TDN/ wean. wt.	TDN/ feedlot gain	TDN/ slaughter wt.	TDN/ edible portion
	lb			
Angus	10.8	5.9	8.3	15.7
Ang x Char	11.0	6.0	8.6	15.6
Char X Ang	10.9	6.2	8.6	15.7
Charolais	11.0	5.9	8.5	15.4

^a Brown and Dinkel (1978).

TABLE 18. EFFICIENCY, BIRTH TO SLAUGHTER^a

Breed of cow	TDN/ wean. wt.	TDN/ feedlot gain	TDN/ slaughter wt.	TDN/ edible portion
			lb	
Ang X Her	9.8	5.0	7.4	16.3
Jer X Ang	8.3	5.1	6.9	15.4
Sim X Ang	8.8	5.3	7.4	15.8

^a Based on data from Martin and McReynolds (1979).

1975; Cartwright, 1970; Notter et al., 1979a,b,c; Smith, 1979; Buckley, 1980; Farris et al., 1981). In the most recent study (Farris et al., 1981), Texas researchers compared the profitability of nine biological types of cows whose calves could either be marketed as weaned feeders or fed for slaughter (table 19). They used the period from 1972 to 1979 to establish input and output prices and considered three cow sizes and three levels of milk. If the calves were sold as weaners, the heaviest milking cows within a size category had the lowest production cost per cwt of calf, but if the calves were fed out to slaughter, the lightest milkers tended to have the lowest costs. Under either marketing strategy, large cows generally exhibited the lowest cost of production. Table 20 shows net return per cow in a South Dakota simulation study (Buckley, 1980) which closely resembled the Texas work. Under either marketing strategy, the larger heavier-milking cows tended to rank higher in net return. Although they are not shown here, the absolute differences in net income were relatively small.

TABLE 19. RANK OF COW BREEDTYPE UNDER TWO MARKET STRATEGIES
(1972-1979 PERIOD)^a

Cow size and milk production	Marketing Strategy	
	Sell weaner calf	Feed out calf
	Rank, lowest to highest production cost, \$/cwt of calf	
Large-heavy	1	4
Large-moderate	3	2
Large-light	2	1
Medium-heavy	4	6
Medium-moderate	5	3
Medium-light	8	5
Small-heavy	6	9
Small-moderate	7	8
Small-light	9	7

^a Farris et al. (1981).

TABLE 20. RANK OF NINE BIOLOGICAL TYPES OF COWS^a

Cow size and milk production	Marketing Strategy	
	Sell weaner calf	Feed out calf
	Rank, net return/cow, \$	
Large-heavy	1	1
Large-medium	2	2
Large-light	4	3
Medium-heavy	3	4
Medium-medium	5	5
Medium-light	6	6
Small-heavy	7	8
Small-medium	8	7
Small-light	9	9

^a Buckley (1980).

Cartwright (1979) at Texas A & M summarized much of the cow efficiency research to date when he made the following statement: "Optimal values for both size and milk production may vary as production conditions and costs and relative prices of cattle change. There does appear to be sufficient potential

for increasing efficiency through matching size and milk production to a given set of conditions to warrant further research in this area; that is, there appears to be an opportunity, largely untapped, for increasing efficiency of beef production by more closely matching cattle to the production conditions." Table 21 presents examples of this match-up; that is, less size and less milk as feed becomes more limiting. The breeds used are examples of combinations of the more common breeds available, but others could be substituted in their place.

Accelerated Systems of Beef Production

In the Midwest, where we are generally blessed with moderate to abundant forage resources, it appears that we can justify systems in which roughly one-half to two-thirds of the genes in the end-product are contributed by larger, heavier-milking breeds. An excellent example of what can be achieved is presented in table 22 (Miller *et al.*, 1980). This table is a summary of

TABLE 21. EXAMPLES OF MATCHING SIZE AND MILK TO FEED RESOURCES

Feed resources	Example
<u>Abundant</u> :	Holstein-Simmental cow x Charolais bull.
<u>Moderate</u> :	Angus-Simmental cow x Gelbvieh bull.
<u>Limited</u> :	Shorthorn-Hereford cow x Limousin bull.
<u>Sparse</u> :	Brahman-Angus cow x Hereford bull.

TABLE 22. EXAMPLE OF ACCELERATED BEEF PRODUCTION

<u>Summary of fourth calf crop (1979).</u>	
Mating system:	Charolais sire x Simmental-Angus cows
Weaning wt. at 205 days (steer basis), lb.	646
Weaning wt/cow exposed, lb	576
Steer slaughter wt at 15 mo, lb	1284
Carcass wt, lb	815
Fat thickness, in.	.20
Yield grade	1.9
Retail cuts/cow exposed, lb	567

^a Miller *et al.* (1980).

the fourth calf crop from a highly productive herd of Simmental-Angus cows mated by A.I. to a superior Charolais sire. Both the actual and adjusted weaning weights were identical, 646 lb. With an 89% calf crop, this herd yielded 576 lb of weaned calf weight per cow exposed. The cows averaged 1148 lb, so they produced a calf that weighed 56% of their body weight. The steer progeny were fed out and slaughtered at 15 mo of age at a weight of 1284 lb with a yield grade of 1.9. Average weight of retail cuts produced per cow exposed was a phenomenal 567 lb. This cow herd is maintained on high quality native range in the summer plus hay and protein supplement in the winter. There is no record of the TDN consumption in this herd, but it does seem reasonably safe to assume that it represents an efficient and potentially profitable system of beef production.

Magee (1979, 1981) at Michigan State University maintains a four-way rotational cross herd of 50 cows composed of Simmental, Holstein, Angus and Hereford blood. They are being compared with three other breeding groups - an unselected Hereford group, a selected Hereford group and another rotational group. Selection is for yearling weight. Figure 1 illustrates the power of selection and crossbreeding in this project. These steers are pictured at 15 months of age, when they were slaughtered. The Hereford came from the unselected straightbred control group and the large steer is from the four-way rotational cross group. These steers are descended from the same base herd of Hereford cows that was used to initiate the project 14 years ago. They each received a quality grade of Choice and a yield grade of 3. The only difference was that the crossbred outweighed the control steer by 75% (1525 vs. 875 lb). The large steer was carried to this age, weight, and fatness to ensure that he would grade Choice. This was perhaps a waste of resources. He could have been killed at 12 mo of age, weighing 1170 lb. when he would have probably yield graded 2 and quality graded Good. For that matter, he could have been

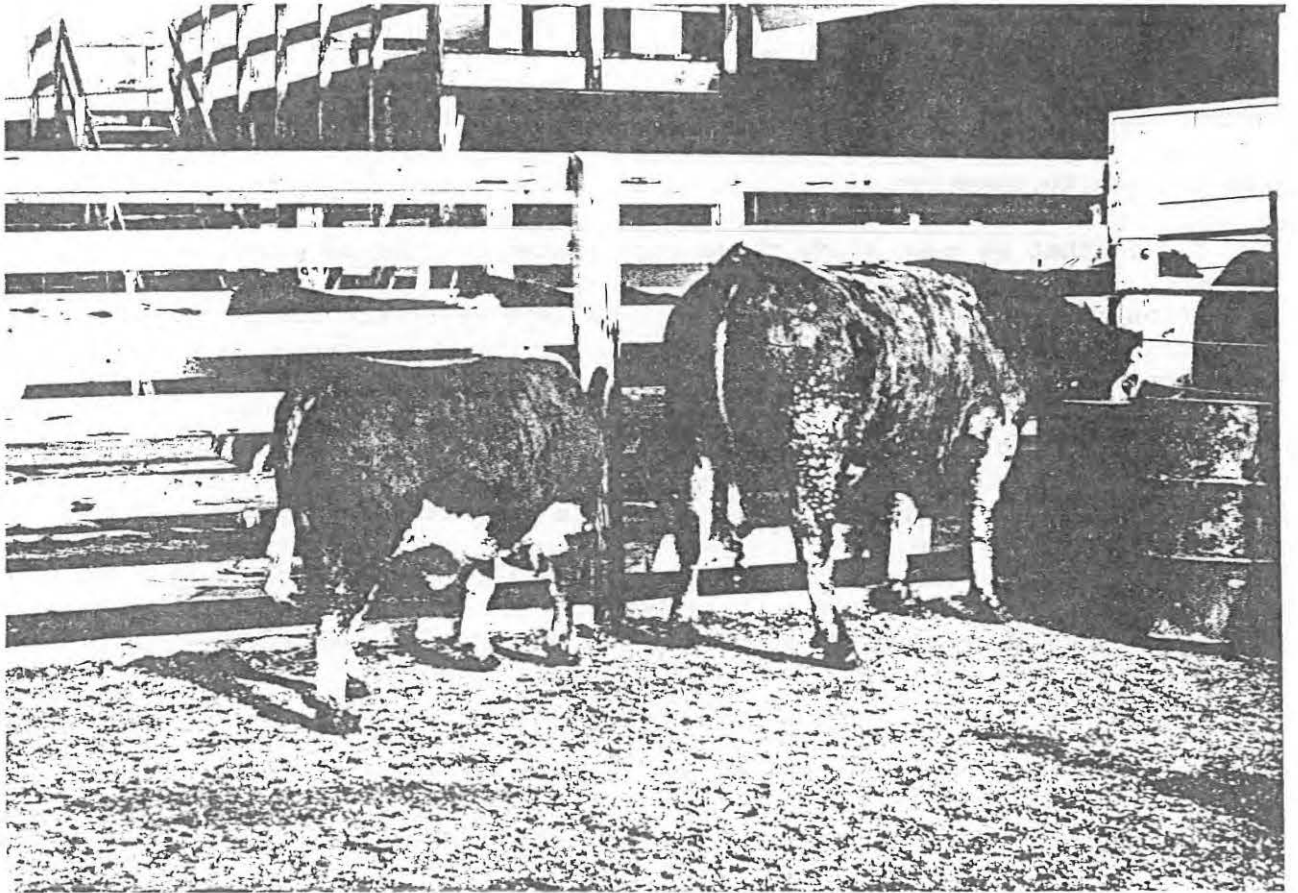


Figure 1. Example of 14 years of selection and crossbreeding (Magee, 1981). These two steers are descendents of the same straightbred Hereford cow herd which was used to initiate this project in 1967. On the day they were slaughtered, they were each 15 months old. The unselected straightbred Hereford control steer weighed 875 lb; the selected 4-breed rotational cross steer weighed 1525 lb.

left on his dam until 9 mo of age and then weaned and slaughtered at a weight of 850 lb. This may seem preposterous to those of us who have been reared in the culture of Choice corn-fed beef. However, I have spent a considerable amount of time in the Adelaide area of South Central Australia, where the bulk of the beef consumed comes from 8- to 11-mo-old weaner calves weighing 600 to 800 lb. Because of its youth, the beef is tender as well as being lean. Whether American consumers would find this younger beef as acceptable as older beef is open to question.

I feel that we must study these accelerated systems as possible beef production alternatives. In addition, I believe we should continue to investigate the feasibility of leaving male calves as intact bulls. The advantage that bulls hold over steers in lean growth has been well documented. Amidst all of this, several questions must be answered by research: (1) How young can we kill cattle and maintain consumer acceptability? (2) What is the lower fat limit on extremely young cattle? (3) Can we make young bull beef as acceptable as steer and heifer beef? For example, recent research at South Dakota (Stout et al., 1981) suggests that palatability of the meat may be improved by implanting young bulls with a hormonal growth stimulant.

The Ideal Steer

The ideal steer is an elusive beast that seems to defy our best efforts to capture him. I can recall attending in 1965 at Chicago my first steer judging conference held on a national level. It was sponsored by the major beef breed associations. I was a wide-eyed cub professor just out of graduate school and I expected that all sorts of wisdom would be flowing out of this event. The underlying reason for calling the conference was the fact that some leading show judges had been selecting steers considered to be too lean for that time. In those days, anything under 0.6 inches of external finish was relatively lean. It was a nice meeting, but not much was accomplished because

we had a very small data base from which to draw up guidelines. Subsequent seminars, sponsored by various organizations, have been more fruitful as a result of the continuing growth of knowledge in the area of performance testing, live animal evaluation and carcass composition.

Now we are gathered together for another seminar in which our objective is to once again more clearly define the ideal slaughter steer. Will we accomplish anything meaningful? I'm not sure. Perhaps the ideal steer is something akin to the ancient unicorn, a mythical beast that existed only in the minds of men. But this analogy is too pessimistic a note with which to begin the symposium. I am confident that with the quality of resource people we have coming up, we will have a worthwhile meeting.

Before closing, I would like to leave you with a few items to think about during the symposium. These are personal biases based upon my own experiences over the years with both steers and breeding cattle:

- (1) A lot of people are worried about getting steers too tall. I don't believe height per se is the main issue. If steers have enough muscle and finish on them within the proper weight range, height should probably be allowed to float.
- (2) What is the proper weight range? Over the country as a whole, 600 to 800 lb. carcasses sell for the highest price. Depending upon dressing percent, this translates into a live weight range of about 950 to 1350 lb. In our state, we sell a significant number of 800 to 900 lb. carcasses to the east coast at no discount, so we can tolerate a live weight of 1400 lb. if the cattle are not over-finished. Other parts of the country undoubtedly have other specifications that differ somewhat from the norm.

- (3) What about finish? Whether we come up with a grade change or not, much of the industry seems willing to treat the top half of the present Good grade on a par with the Choice grade if the cattle are fed properly, which of course is hard to verify. At any rate, Champion steers which grade top Good do not seem to raise the ire of the public like they once did.
- (4) Most of my work involves commercial cow-calf producers as well as purebred breeders in Michigan and surrounding North Central states. I have some concern that we need to think about maintaining so-called "volume," "doing-ability," "constitution," "fleshing-ability," etc. in our beef cattle population. I have noted some problems in herds where certain cows lack these characteristics. They don't winter well and they have trouble re-breeding the following spring, especially if they are heavy milkers. Selecting extremely trim, shallow-bodied, shallow-ribbed steers may encourage purebred breeders to select too far in this direction. I think this could become a real problem if we are not careful.
- (5) Related to the "volume" issue is our preoccupation with trim front ends. As judges, we probably pay too much attention to this trait, and I have been as guilty as anyone. We need to keep in mind that there is little economic significance to this trait.

There are many other issues that we could discuss, but I am certain they will come to light as this symposium develops.

EFFECT OF SELECTING FOR FRAME SIZE AND BODY TYPE ON FEED EFFICIENCY AND ECONOMIC RETURNS

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The overall goal of the beef industry should be to minimize energetic and economic costs of producing beef, so that it will be produced at a price consumers can afford and in a quantity that will meet their nutritional needs and personal desires.

Beef production is a very diverse and segmented industry in the United States, however and it is difficult to develop a coordinated effort to improve overall efficiency. Beef cows are kept in small herds (over 60% are in herds of less than 100 head) over a wide area in the U.S. to utilize those land or feed resources on farms and ranches that have little or no alternative use. Typically, the beef herd is secondary or lower in economic importance, as it is often a supplement to other farm or non-farm sources of income. Therefore, breeding systems that require time or economic resources that cannot be justified due to the size or economic importance of the herd will not be used in a large number of herds, even if overall efficiency would be improved. Beef production in the U.S. is further complicated by our system of finishing cattle. Most of our feeder cattle are gathered and transported to lots in regions where feed grains are in surplus. Therefore, it is difficult to maintain identity of cattle from superior performing herds, especially since 2/3 are placed in lots of over 1000 head capacity. To add to the confusion, it is not clear what we should select for to improve overall efficiency of beef production in the U.S. Further, priorities will vary due to location, environment and personal preferences. Therefore conclusions on selection priorities must be tempered by the variation in conditions under which beef is produced in the U.S.

There are some known relationships between body size, energy requirements, and slaughter weights that optimize energetic and economic efficiency. Also there are known relationships between traits we can measure easily (weight, height, growth rate, etc.) and feed efficiency. In the first part of this paper these relationships and how they influence overall efficiency of production will be outlined. Then some guidelines on how to use the usual information collected on breeding cattle to properly evaluate their performance will be given, based on known relationships between body size and energy requirements.

Economic Importance of Various Traits

Using current market prices, the economic value of various traits can be estimated (table 1). In most cases, the economic impact of 10% improvement in the trait was used as a basis for making some simple comparisons. It is clear that selecting for traits that relate to feed efficiency and carcass characteristics (weight, fat content and distribution) should have a high priority. These values suggest that certain carcass weights are desirable,

and that we prefer beef containing some fat. This is likely justified for a variety of reasons (flavor, prevention of drying and discoloring, prevention of cold shortening, etc.)

TABLE 1. ECONOMIC IMPORTANCE OF GENETICALLY RELATED FACTORS

Trait	Difference	Value	Heritability	Adjusted Value
Calf crop/12 mo. ^a	90% vs. 81%	\$32	10%	\$3.20
Weaning weight ^a	500 vs. 450	\$50	30%	\$12.00
Rate of gain ^b	3.0 vs. 2.7	\$ 6	50%	\$3.00
Feed efficiency ^b	7.2 vs. 8.0	\$24	40%	\$10.00
Quality grade ^c	100% Choice vs. 50% Choice	\$9.45	40%	\$3.78
Yield grade ^c	100% 3's vs. 50% 4's	\$12.60	30%	\$3.78
Frame size ^d	Carcass over 600 lb at low choice	\$ 6	60%	\$3.60
	Carcass under 500 lb	\$20	60%	\$12.00

^aValue of feeder calf = 80¢/lb.

^bValue/600 lb gain. Ration cost \$100/ton; non-feed cost = 28.4¢/day.

^cDiscount of \$3/cwt. carcass for good vs. choice. Discount of \$4/cwt. carcass for yield grade 4.

^dWeight discounts used/cwt. carcass; 500-600, \$1/cwt.; under 500, \$4/cwt..

Relationship of Rate of Gain and Body Composition to Feed Efficiency

Increased rate of gain alone (assuming weight at low choice grade is not changed) simply reduces time in the feedlot, which means a lower interest, labor and use of facilities cost. The greatest benefit of an increase in daily gain is if it is also associated with a reduction in feed requirements/lb gain. Table 2 shows the relationship between daily gain, dry matter intake, feed consumed over maintenance needs, and feed requirements/lb gain. Animals of a given size with a greater daily gain can be expected to have a greater appetite and improved feed efficiency, due to a greater dilution of daily maintenance costs. Recent reviews of the literature have shown that cattle could likely be selected for greater appetite, but selection for improved digestive or

metabolic efficiency would be difficult (Harpster, 1978; Reid, 1962). Therefore it follows that if daily gain is increased, dry matter intake likely increased also.

TABLE 2. RELATIONSHIP OF DAILY GAIN, FEED INTAKE AND FEED EFFICIENCY IN AN 850 LB STEER

Daily Dry Matter Intake lb	Daily Gain lb	Feed for Maintenance lb	Feed for Gain lb	Feed/gain
15	1.82	7.5	7.5	8.24
17	2.26	7.5	9.5	7.52
19	2.68	7.5	11.5	7.09
21	3.09	7.5	13.5	6.80
23	3.48	7.5	15.5	6.61

In most studies to date in which heritability estimates for feed efficiency were determined, it is not clear whether the improvement in feed efficiency was due to a difference in appetite alone or if the composition of the gain was different as well. Energy is stored more efficiently in the body as fat than as protein; fat tissue contains 9.385 Kcal/gm, and protein contains 5.532 Kcal/gm, (Garrett, 1969). Thus less energy is required/lb of weight gain when a higher proportion is muscle rather than fat tissue, due to a lower energy concentration in protein and more water being retained in association with the protein. Therefore, before energy requirements/unit of gain can be accurate the composition of the gain must be described. Figure 1 shows the change in body composition as an animal increases in maturity. The equations that describe these relationships were developed by Reid (1978) based on a summary of body composition data available in the literature on British breed steers. This figure shows that composition of the gain changes during growth, with an increase in proportion of fat and a decrease in proportion of protein as the animal grows. When no additional protein is deposited with additional gain, the animal is chemically mature. At this point, they will store additional energy consumed above maintenance as fat, but will not deposit additional protein. Figure 2 shows the change in net energy required for 2.5 lb/day gain on an average frame steer from weaning to low choice.

Table 3 shows the weight and composition of various cattle types when fed corn grain-corn silage rations in recent trials. These studies show that animals varying in frame size are heavier at the same composition. A system of "equivalent weights" to describe the weights at which cattle of different frame sizes and sexes have a similar body composition based on these and other studies was developed (Table 4; Fox and Black, 1982). These can be used to predict energy and protein requirements at any given weight. They can also be used to estimate carcass quality and yield grade, since they are related to carcass fat content (Table 5; Fox and Black, 1982).

FIGURE 1. RELATIONSHIP OF BODY COMPOSITION TO BODY WEIGHT

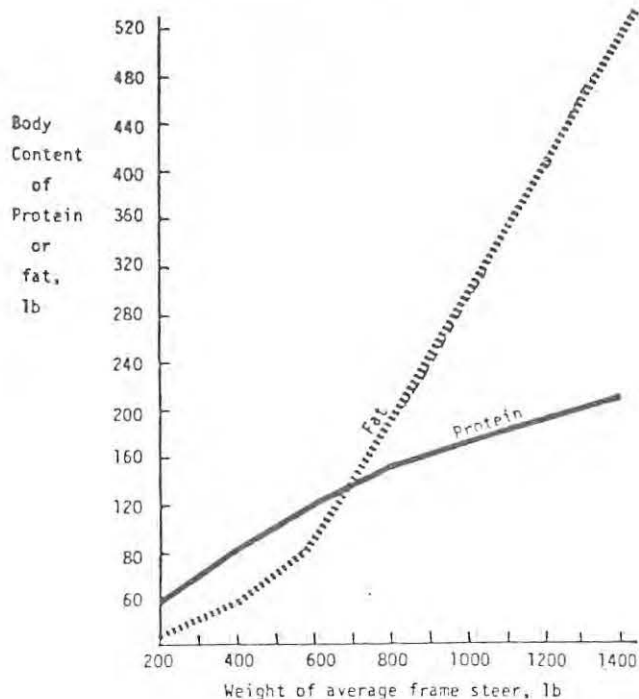


FIGURE 2. CHANGE IN NET ENERGY REQUIREMENTS AS CATTLE INCREASE IN WEIGHT

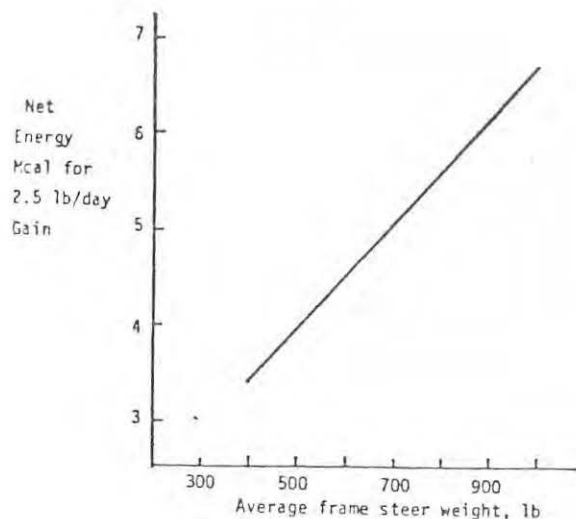


TABLE 3. WEIGHT OF DIFFERENT CATTLE TYPES AT FATNESS OF HIGH GOOD - LOW CHOICE GRADE

Trial and Cattle Type	Final Shrunken Weight, lb	Empty Body Fat, %	Carcass	
			Quality Grade ^a	Yield Grade
<u>Crickenberger et al (1978)</u>				
Small Angus steers	829	28.1	9.3	2.7
Average Angus steers	937	28.0	9.9	2.8
Chianina crossbred steers	1258	24.0	8.8	2.3
Holstein steers	1232	25.2	10.6	2.7
<u>Woody et al (1978)</u>				
Charolais x British breed crossbred steers	1132	27.5	9.8	2.5
Hereford steers	1094	28.7	8.7	3.1
<u>Lomas et al (1978)</u>				
Hereford steers	961	24.1	7.9	2.8
Charolais x Hereford steers	1153	23.6	8.8	2.3
<u>Danner et al (1978)</u>				
Hereford heifers	838	28.7	9.1	2.7
<u>Harpster et al (1978)</u>				
Small Hereford heifers	750	26.5	8.9	2.4
Average Hereford heifers	887	25.7	9.1	2.7
Hereford-Angus-Charolais heifers	940	25.2	9.5	2.7
Hereford-Angus-Holstein heifers	1007	27.8	9.5	2.9
Small Hereford steers	960	29.1	9.6	2.9
Average Hereford steers	1089	30.0	9.5	3.5
Hereford-Angus-Charolais steers	1198	28.1	9.9	3.1
Hereford-Angus-Holstein steers	1214	29.4	10.2	3.5

^a Good⁰ = 8; Good + = 9; Choice - = 10.

TABLE 4. WEIGHTS AT WHICH VARIOUS FRAME SIZES OF GROWING CATTLE HAVE SIMILAR NUTRIENT REQUIREMENTS

Fat	Empty body composition, %							
	14.9	17.2	19.5	21.8	24.2	26.5	28.8	
Protein	19.5	19.1	18.6	18.1	17.6	17.1	16.5	
----- Shrunken weight, lb -----								
Frame code	Steers							Breed and type
	1	2	3	4	5	6	7	
1	400	480	560	640	720	800	880	Small-frame British
2	425	510	595	680	765	850	935	
3	450	540	630	720	810	900	990	
4	475	570	665	760	855	950	1045	Average-frame British
5	500	600	700	800	900	1000	1100	
6	525	630	735	840	945	1050	1155	Large-frame British
7	550	660	770	880	990	1100	1210	
8	575	690	805	920	1035	1150	1265	
9	600	720	840	960	1080	1200	1320	Average-frame European British x European Large-frame European, Holstein
Heifers								
1	320	385	450	510	575	640	705	Small-frame British
2	340	410	480	540	610	680	750	
3	360	435	510	575	645	720	795	
4	380	455	535	610	685	760	840	Average-frame British
5	400	480	560	640	720	800	880	
6	420	500	585	670	755	840	920	Large-frame British
7	440	525	610	705	790	880	965	
8	460	550	640	735	830	920	1010	
9	480	575	670	770	865	960	1055	Average-frame European British x European Large-frame European, Holstein
Bulls								
1	480	575	670	770	865	960	1055	Small-frame British
2	510	610	715	815	920	1020	1120	
3	540	650	755	865	970	1080	1190	
4	570	685	800	910	1025	1140	1255	Average-frame British
5	600	720	840	960	1080	1200	1320	
6	630	755	880	1010	1135	1260	1385	Large-frame British
7	660	790	925	1055	1190	1320	1450	
8	690	830	965	1105	1240	1380	1520	
9	720	860	1010	1150	1300	1440	1585	Average-frame European British x European Large-frame European, Holstein

TABLE 5. ESTIMATED CARCASS QUALITY AND YIELD GRADE

Empty Body, % Fat	Carcass, % Fat ^a	Quality Grade ^b	Yield Grade ^c
25.6	28.5	Good +	2.2
26.9	29.8	Good +	2.5
28.1	31.2	Good +	2.8
29.3	32.5	Choice -	3.1
30.6	33.8	> Choice -	3.4
31.8	35.2	> Choice -	3.7
33.0	36.5	> Choice -	4.0
34.2	37.8	> Choice -	4.3

^aGarrett and Hinman, 1969. Carcass fat = .7 + 1.0815 (empty body fat). R² = .98.

^bFox and Black, 1977. Quality grade = 2.5 + .23 (carcass fat) for a range of 15 - 38% carcass fat, Good⁰ = 8, Choice⁻ = 10. Accounted for 62 - 72% of the variation in quality grade over the data base used (Crickenberger *et al*, 1978; Madamba, 1966; Riley, 1969).

^cYield grade = .15 (% carcass fat) - 1.7.

Using this system, expected performance of cattle of different frame sizes at varying initial and final weights can be predicted and compared. A scale of 1 - 9 was devised to correspond to different weights of cattle at the same composition. This range was chosen rather than the commonly accepted Missouri scale of 1 - 7, to correspond to the 9 USDA feeder calf grades. A frame score "5" is similar to a Missouri frame 4 and a "9" is similar to the Missouri frame score 7. Table 5 compares the predicted performance of small (frame 1), average (frame 5) and large (frame 9) steers from "equivalent" initial weights to a fatness of 28% body fat, which would correspond to low choice - yield grade 3. The larger steers have a heavier average weight, and therefore a higher maintenance requirement. They also consume more feed. The energy requirements/unit gain is the same. The daily gain is greatest for the large cattle but not relative to their average weight. Thus gain/unit of average metabolic body size (relative gain) would have to increase to improve feed efficiency. The predicted relative performance of the different frame sizes agrees closely with the results of Klosterman and Parker (1976), Brungardt (1972), Smith et al. (1976a), and Crickenberger et al. (1978).

In the studies of Smith et al. (1976), efficiencies to equal fatness only varied from 20.6 to 22.1 MCal ME/kg gain across 1105 steers from Hereford, Angus, Jersey, South Devon, Limousin, Charolais and Simmental sires. Crickenberger et al. (1978) found that MCal ME required per kg edible portion gain only varied from 55.2 to 57.1 across small and average size Angus and Angus X Chianina crossbred. However, Holsteins required 72.1 MCal ME/kg edible portion. An extensive review of the literature (Fox and Black, 1982) indicate that while differences in feed efficiency are small across a wide variation in beef breed cattle, Holstein steers may be an exception.

A computerized performance simulation program was developed to predict daily gain, feed intake, total feed requirements, carcass grades, cost of gain and profits of different cattle types under different environmental conditions (Fox and Black, 1982). Current feed costs, non-feed costs (interest, medical transportation, facilities, etc.), death loss and shrink, feeder and finished cattle prices and price differentials for different grades are entered along with the frame size, sex, environment, feed additives and growth stimulants used, and ration composition fed during different periods. It should be noted here that larger frame cattle have a higher daily non-feed cost, due to a greater initial cost because of their greater weight, which increases interest and death loss cost/head. Also more space is required because of their larger size, and more feed and manure is handled/head. Crickenberger and Black (1976) discussed these costs in detail. Therefore, most non-feed costs are proportional to size. Field testing of this program was conducted to determine its accuracy and usefulness. These field observations have been summarized (Fox and Black, 1982; Minish and Fox, 1982). One of the uses is to compare the optimum slaughter weight of different cattle types and different combinations of cattle, feed and non-feed prices.

TABLE 6. PERFORMANCE NEEDED BY CATTLE DIFFERING IN FRAME SIZE TO ACHIEVE EQUAL FEED EFFICIENCY

	Frame Size		
	Small	Average	Large
Equivalent initial weight, lb	400	500	600
Weight at low choice, lb	880	1100	1320
Average weight while on feed, lb	640	800	960
Daily net energy for maintenance, Mcal	5.47	6.47	7.41
Net energy/lb gain, Mcal	2.11	2.11	2.11
Expected daily intake, lb	14.0	16.5	18.8
Relative intake, gm/W ₀ ^{.75}	89	88	87
Equivalent daily gain, kg/lb	2.20	2.60	3.00
Relative gain, gm/W ₀ ^{.75}	14	14	14

Table 7 compares expected profitability of frame size 5 and 9 steers at the same weight and at the same grade, at current prices (see footnotes to table 1.) At the same weight, the large frame steer has a faster rate of gain, and lower feed/lb gain due to less fat in the gain. However, it would also have a lower quality grade and at current discounts for the good grade, would be \$77.60 less profitable/head. Even if the price for good and choice were equal, the larger frame steer may not be as profitable fed to the same weight due to less dilution of fixed "start up" costs (procurement, transportation, death loss, etc.). At the same grade, however the large steer returns a similar profit/lb gain or more/head because of more weight gain. Thus the cattle feeder could use either type to produce a given amount of gain. However, any discounts for carcass weight (light or heavy) or for breed effects on fat distribution must be included in the prices used for the finished cattle.

TABLE 7. IMPACT OF SLAUGHTER WEIGHTS ON PROFITS

Frame	Shrunk Weight lb	Daily Gain lb	Feed/ Gain	Quality Grade	Yield Grade	Sale Price \$/cwt.	Net Return /Head \$
Average	1050	2.34	6.94	C -	3.1	78.0	+ 38.40
Large	1050	2.63	6.52	Gd +	2.1	76.20	- 39.20
Large	1250	2.67	6.96	Ch -	3.1	78.0	+ 47.40

The Effect of Selection for Growth Rate and Cattle Type on Returns to the Beef Herd, Cattle Feeder, or to the Entire System of Beef Production

Almost no data has been reported on the impact of selection for growth rate on feed and energetic efficiency, where the resulting calves were fed to the same final carcass composition. To provide some information on this effect, feeding trials were conducted with the cows and calves from a selection study at Michigan State University. The results of this study have been reported by McPeake (1977) and Harpster et al (1978). (For the

literature reviews and complete details, it is suggested that the Ph.D. theses of Charles McPeake (1977) and Harold Harpster (1978) be obtained from University Microfilms, Ann Arbor, Michigan).

To initiate this study, 200 Hereford cows were divided into 4 herds of 50 cows each. The mating system used for each herd was: random, (unselected Herefords, USH); selection for yearling weight (selected Herefords, SH) selection for yearling weight and 3 breed rotation with Hereford, Angus and Charolais (AHC) and 3 breed rotation with Hereford, Angus and Holstein (AHH). The first matings were made in 1967; the first calves were obtained from F₁ dams in 1970. Table 8 shows the impact on the cow herd of each breeding system. One of the effects was to increase cow size. Additional weaning weight was obtained above that expected for the change in cow weight, due to selection and/or the differential between sire and dam mature size. With only a 20% replacement rate, it will take several years more for average cow size to reach the same level as the sires used. There was an additional benefit due to crossbreeding, agreeing with the results of many others. This effect was improved fertility and likely increased milking ability of the dams. Under conditions of this study, feed efficiency/lb weaning weight improved by all three practices; selection, crossbreeding, and use of dairy breeding to increase milk production.

TABLE 8. IMPACT OF SELECTION AND CROSSBREEDING ON FEED REQUIREMENTS OF BEEF HERDS^{a,b}

	Unselected Hereford	Selected Hereford	Hereford Angus Charolais	Hereford Angus Holstein
Cow weight ^c	873	933	1001	999
Individual weaning weight, lb	408	454	514	551
Additional due to				
Cow frame size	-	11	22	22
Selection + bull-cow differential size	-	35	35	35
Crossbreeding	-	-	49	86
Feed DM/cow unit, Tons	4.84	5.00	5.33	5.44
% weaned	80	80	85	90
Average salable calf weaning wt., lb	326	363	437	496
Cull cow weight sold/yr.	174	186	200	200
Feed/lb weight sold/yr.	19	18	17	16

^aMcPeake, 1977; Harpster, 1978.

^bIncludes data from 1972-1976 calf crops.

^cTaken at weaning in the fall.

The next step was to determine the value of the calves to the cattle feeder. At weaning, for 3 years steer calves produced from each herd were placed on high corn silage or high corn grain rations. In two of these 3 years, heifers not saved for replacements were fed on a high silage ration to compare with steers

from the same herd fed the same ration. Table 9 compares the performance of the heifers not saved for replacements with steers fed an all corn silage ration to the same degree of fatness. The first change is an increase in carcass weight at a small degree of marbling. If a 600 lb carcass is the minimum accepted without discount, then steer weight from the same herd was over 1250 lb so that heifer mates were near 1000 lb at a small degree of marbling, yield grade 3, 29% carcass fat. Actual daily gain and intake increased with cattle size, but relative gain was similar across all types and both sexes, supporting the basic principles discussed previously. Differences in feed requirements between steers and heifers within each breeding group were small, but heifers consistently required about 2% more feed/lb gain. Feed requirements were higher for the crossbred steers and heifers, however.

TABLE 9. EFFECT OF SELECTION AND CROSSBREEDING ON PERFORMANCE OF STEERS AND HEIFERS FED AN ALL CORN SILAGE RATION^a

		Unselected Hereford	Selected Hereford	Hereford Angus Charolais	Hereford Angus Holstein
Carcass weight, lb	Steers	587	664	730	766
	Heifers	466	550	583	625
Adjusted final live weight, lb ^b	Steers	970	1098	1207	1266
	Heifers	770	909	964	1033
Daily gain, lb	Steers	2.00	2.20	2.31	2.35
	Heifers	1.65	1.85	1.98	2.00
Relative gain, gm	Steers	12	12	12	12
	Heifers	12	12	12	12
Dry matter intake, lb	Steers	15.7	17.8	19.0	20.3
	Heifers	13.5	15.7	16.8	18.2
Relative intake, gm	Steers	96	99	99	101
	Heifers	100	103	103	104
Feed/100 lb gain	Steers	786	828	847	857
	Heifers	805	847	866	876
<u>Marbling</u> ^b	Steers	small	small	small	small
	Heifers	small	small	small	small
<u>Yield grade</u> ^b	Steers	2.6	3.0	3.0	3.2
	Heifers	2.0	2.4	2.3	2.6

^aHarpster, 1978. Two-year summary.

^bFinal weights, performance and carcass data adjusted to equal dressing percentage and to 29.2% carcass fat.

Table 10 summarizes three years of comparisons between each of the types of steers fed high silage or high grain rations. Daily gains increased with body size but relative gain did not. It is clear that relative gain could be increased by feeding more grain but not by increasing frame size. Feed requirements/100 lb gain were not different between unselected and selected steers

fed either ration. However, those steer calves from crossbred cows had higher feed requirements. Note that carcass marbling, grade and fatness were not very different between cattle types. However, those fed high grain rations consistently contained more fat and had poorer yield grades, even though marbling was not improved by feeding a high grain ration. Similar results have been obtained in other trials recently (Crickenberger *et al*, 1978; Danner *et al*, 1978; Woody *et al*, 1978). It should be noted here that the gains and feed requirements obtained in this study for the different cattle types agree closely with those predicted by the performance simulator described earlier.

TABLE 10. EFFECT OF SELECTION AND CROSSBREEDING ON STEERS FED ALL CORN SILAGE OR HIGH GRAIN RATIONS^a

	Unselected Hereford	Selected Hereford	Hereford Angus Charolais	Hereford Angus Holstein
Final carcass weight, lb	601	691	763	774
Adjusted final live weight, lb	974	1120	1237	1254
<u>Carcass fat, %</u>				
High silage	30	31	29	30
High grain	34	35	33	35
<u>Marbling Score</u>				
High silage	small	small	small	small
High grain	small	small	small	modest
<u>Yield grade</u>				
High silage	2.7	3.2	2.9	3.3
High grain	3.1	3.6	3.3	3.7
<u>Daily gain, lb</u>				
High silage	1.89	1.98	2.29	2.22
High grain	2.51	2.79	2.90	2.84
<u>Relative gain, gm</u>				
High silage	12	12	11	11
High grain	15	15	15	14
<u>Dry matter intake, lb</u>				
High silage	15.8	17.9	19.4	20.0
High grain	15.4	17.5	19.0	19.6
<u>Relative intake, gm</u>				
High silage	97	100	98	100
High grain	93	96	95	96
<u>Feed/100 lb. gain</u>				
High silage	847	851	877	887
High grain	609	614	639	726

^aHarpster, 1978. Three-year summary of feeding trials.

Using the data shown in Tables 9 and 10 the value/lb of the steers and heifers from each type to a cattle feeder was calculated (Table 11). The footnotes show the assumptions used to make these calculations. The crossbred steers were worth less than the straight breed steers because of their higher feed requirements. The advantage of the crossbred heifers in carcass weight was offset by their lower feed efficiency. Other studies have shown the negative relationship between maternal ability of the dams and feedlot performance of the calves.

This study shows that producing cattle that improve beef herd performance will not necessarily improve returns for the cattle feeder. The breeding system that will likely prevail is one that is best overall, considering all segments. The overall profitability of each breeding system is summarized in Table 12. This table compares the returns/250 tons of feed available for a beef herd. The crossbred herd is the most profitable overall primarily due to improved percent calf crop weaned. The selected steers are more profitable than the unselected, primarily due to cow size not having caught up to the mature size of the selected bulls used, thus reducing feed costs relative to the weaning weight produced. Additionally, a heavier carcass was produced, avoiding carcass weight discounts.

TABLE 11. RELATIVE VALUE OF FEEDER CALVES TO A CATTLE FEEDER^a

	Unselected Hereford	Selected Hereford	Hereford Angus Charolais	Hereford Angus Holstein
----- Choice @ 50¢ -----				
Steers, \$/lb	.49	.49	.48	.44
Heifers, \$/lb	.42	.43	.44	.42
----- Choice @ 80¢ -----				
Steers, \$/lb	1.19	1.21	1.14	1.12
Heifers, \$/lb	1.05	1.13	1.09	1.05

^aRation cost @ \$100/ton, DM, nonfeed costs @ 11¢/lb gain + 3¢/lb gain feedlot profit. Discounts @ 80¢ steers: Steers < 1000 lb, 1¢; Heifers < 830 lb, 4¢; Heifers 830 - 920, 3¢; Heifers 920 - 1000, 2¢. Discounts @ 50¢ steers: Heifers < 830, 3¢; Heifers 830 - 920 2¢; 920 - 1000, 1¢.

TABLE 12. GROSS RETURNS/250 TONS BEEF HERD FEED^a

	Unselected Hereford	Selected Hereford	Hereford Angus Charolais	Hereford Angus Holstein
<u>Cattle sold/year</u>				
% Steers	40	40	42.5	45
% Heifers	20	20	22.5	25
% Cull cows	20	20	20	20
<u>Weight marketed/cow unit</u>				
Steers, lb	392	442	517	574
Heifers, lb	155	183	219	260
Cull cows, lb	174	186	200	200
<u>Returns/cow unit, \$</u>				
Steers @ 50¢	163	179	215	225
Steers @ 80¢	367	413	485	528
Beef herd units kept	51.6	50	46.9	46.0
<u>Returns for herd, \$</u>				
Steers @ 50¢	8431	8931	10068	10355
Steers @ 80¢	18372	20647	22753	24265

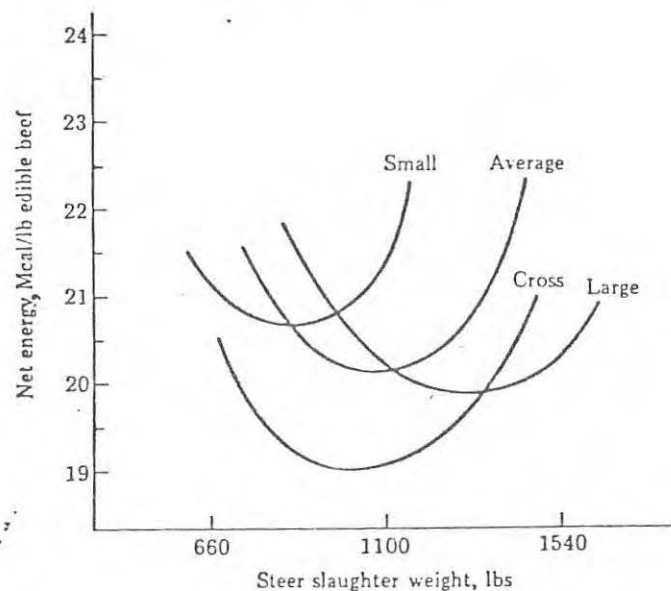
^aFeed purchased to finish calves from weaning to slaughter. Ration cost @ \$100/ton DM, nonfeed costs @ 11¢/lb gain + 3¢/lb gain feedlot profit. Discounts @ 80¢ steers: Steers < 1000 lb, 1¢; Heifers < 830 lb, 4¢; Heifers 830 - 920, 3¢; Heifers 920 - 1000, 2¢. Cows @ 70% of steer price. Discounts @ 50¢ steers: Heifers < 830, 3¢; Heifers 830 - 920, 2¢; 920 - 1000, 1¢. Cows @ 60% of steer price.

A System for Evaluating Breeding Cattle for Improved Efficiency

It is clear that any system for evaluating breeding cattle for improved efficiency must take into account carcass weight needed, stage of growth and composition of gain, and maintenance cost. Also any effect on age at puberty and re-breeding performance must be taken into account. A logical approach to evaluating breeding cattle for efficiency of production based on the physiological and nutritional principles and data presented earlier would be as follows:

1. Select the live weight wanted at a given chemical composition. Figure 3 shows that the most efficient point is to slaughter the calves when they reach approximately 26% body fat (slight marbling, yield grade 2 - 2½). Included are maintenance costs of the breeding herd and energy costs of growth and maintenance post-weaning. We now slaughter them at an average of about 29% body fat (small marbling, yield grade 2½ - 3).

FIGURE 3. IMPACT OF STEER SLAUGHTER WEIGHT ON ENERGETIC EFFICIENCY^a



^aFox and Black, 1975.

We may reduce fat requirements in the future as new technology is developed in slaughter, handling and cooking procedures, allowing us to slaughter at the most efficient point. Table 4 can then be used to determine the frame size needed. For example, assuming a minimum 600 lb carcass and maximum 750 lb carcass weight, frame size 6 - 8 cattle would be best for the industry as a whole (Missouri frame 4 - 6). Using this approach, the optimum size can be selected for each beef marketing situation.

2. Feed heifer and bull calves on a standardized medium energy ration post-weaning to near 365 days of age. Make evaluations at this point, so that enough time is allowed for equalization for pre-weaning environment. Obviously calves that were sick for an extended period during either the pre-weaning or post-weaning period cannot be compared with each other, nor can those that were in an environment where severe nutritional stress occurred. However, those receiving less milk and/or grass will likely compensate on a 140-160 day post-weaning test ration, if they are equal in growth potential.

3. At 365 days:

A. Use the best system available to estimate frame size. (Currently hip height and the Missouri system are being used). Then ratio daily gain of cattle (365 day weight and 140 day test gain) within frame sizes.

or

B. Enter the initial weight, final weight, and ration into the performance simulator to estimate average expected performance, which can be divided into actual performance to estimate an efficiency ratio, to allow comparison across frame sizes.

Table 13 gives an example of how average expected weights for various frame sizes of bulls and heifers at 365 days can be predicted, based on expected weaning weights and performance. These tables were developed by entering the frame size, equivalent 205 day weaning weight, and indicated energy level for the ration into the performance simulation program. It was assumed that the calves were fed in a no stress environment during the post-weaning feeding period, and no growth stimulant was given to the heifers. Thus if an animal exceeds these weights within a frame size, it would be above average for the population within that frame size, and would likely have an improved feed efficiency due to a greater daily feed intake and dilution of maintenance requirements, as discussed earlier. This approach may be as accurate as determining actual feed intake, if adjustments are not made for stage of growth.

Within each frame size, the expected mature weight is given. These are estimates, using extrapolations of the growth curves described earlier.

Table 14 gives example comparisons of bulls fed at the Cornell Bull Test in 1978-79. The first comparison is between the four bulls with the highest daily gain on test. The Angus bull gaining 3.94 was clearly more efficient than the others. However, the other Angus and the Simmental bull were no different in efficiency, even though their daily gains were different, due to the difference in frame size. The Chianina was above average expected for the ration and his frame size, but was not as efficient as the others. In the next comparison, the faster gaining Hereford was not likely more efficient than the slower gaining Hereford, due to differences in frame size. However, in the next comparison, the fastest gaining Simmental would clearly be superior as the frame size was equal.

TABLE 13. EXPECTED AVERAGE 365 DAY WEIGHTS FOR HEIFERS AND BULLS FED DIFFERENT ENERGY LEVELS POST WEANING

	Frame Size ^a						
	1	2	3	4	5	6	7
	<u>Expected mature weight^b</u>						
Cows	880	950	1025	1100	1175	1245	1320
Bulls	1460	1585	1706	1830	1955	2076	2200
	<u>Expected average adjusted 205 day weaning weight^c</u>						
Male calves	420	445	470	495	520	545	570
Female calves	355	375	400	420	440	460	480
	<u>Expected 365 day weight for heifers, 1b^d</u>						
<u>Ration TDN, % in DM</u>							
63	485	515	540	570	600	630	655
66	515	545	575	605	635	665	690
70	545	575	610	640	670	705	735
	<u>Expected 365 day weight for bulls, 1b^d</u>						
<u>Ration TDN, % in DM</u>							
70	710	750	790	830	870	910	945
75	770	815	860	900	945	985	1020
80	820	865	910	960	1005	1050	1090

^aMissouri frame score.

^bCows assumed to be in average condition (weight:height ratio of 3.9 kg. body weight/cow height at hooks; Klosterman and Parker, 1976).

^cAssumes average adjusted 205 day weight/kg cow weight ^{.75} of 2.13 kg for males and 1.80 kg for females, based on data of McPeake (1977).

^dWeights assumed to be after 16 hours without feed and water. Add 4% to expected weight if shrunk weight not used. Assumes a no stress environment, and no growth stimulant used.

The 365 day ratios should be the most useful, as any differences in preweaning nutrition and condition would tend to be equalized.

The program and standards proposed here are only suggested as a means of evaluating an animal's performance. Bulls and heifers must be proven to see if they have the ability to transmit these traits, and further research is needed to determine the heritability of feed efficiency to the same composition.

TABLE 14. COMPARISON OF BULL PERFORMANCE-1979
TEST - CORNELL

Breed	Initial Weight	Final Weight	Daily Gain	Frame Score ^a	140 Day Test Actual/Predicted Gain ^b	Actual/Predicted 365 Day Weight ^c
Angus	589	1141	3.94	5	1.35	1.10
Simmental	591	1109	3.70	6	1.27	1.12
Angus	483	977	3.53	3	1.28	0.79
Chianina ^d	902	1380	3.41	9	1.13	1.11
P. Hereford	601	1047	3.19	5	1.09	1.05
P. Hereford	621	998	2.69	2	1.08	1.06
Simmental	591	1109	3.70	6	1.27	1.12
Chianina	553	980	3.05	6	1.05	0.90

^aMissouri frame score.

^bPerformance simulation program of Fox and Black (1982) used to determine expected gain, based on initial and final weight, frame size and ration energy level.

^cActual 365 day weight = adjusted 205 day weight + (post-weaning test daily gain x 160). Predicted weight taken from Table 13, with 4% added, as full weight used for final off test weight.

^dProjected from Missouri frame score system.

LITERATURE CITED

- Brungardt, V. S. 1972. Efficiency and profit differences of Angus, Charolais and Hereford cattle varying in size and growth. Feed efficiency and total feed requirement during the feedlot phase to reach choice grade. Res. Rpt. R2398. Univ. of Wisc.
- Crickenberger, R. G. and J. R. Black. 1976. Influence of frame size on performance and economic considerations of feedlot cattle. Mich. Agr. Expt. Sta. Res. Rpt. 318.
- Crickenberger, R. G., D. G. Fox and W. T. Magee. 1978. Effect of cattle size, selection, and crossbreeding on utilization of high corn silage or high grain rations. J. Anim. Sci. 46:1748.
- Danner, M. L., D. G. Fox and J. R. Black. 1978. Effect of ration energy density, protein level, and monensin on performance and carcass characteristics of Hereford heifers. Mich. Agr. Exp. Sta. Res. Rpt. 353.
- Fox, D. G. and J. R. Black. 1976. Influence of cow size, crossbreeding and slaughter weight on the energetic and economic efficiency of edible beef production. Mich. Agr. Expt. Sta. Res. Rpt. 288.
- Fox, D. G. and J. R. Black. 1982. A system for predicting body composition and performance of growing cattle. J. Anim. Sci. (accepted for publication).
- Fox, D. G. and J. R. Black. 1977. Influence of feeding system and environment on the energetic and economic efficiency of gain in growing and finishing cattle. Mich. Agr. Exp. Sta. Res. Rpt. 328.
- Fox, D. G. and J. R. Black. 1977. Use of performance simulation to predict cost of gain under varied conditions. Mich. Agr. Expt. Sta. Res. Rpt. 328.
- Garrett, W. N. and N. Hinman. 1969. Re-evaluation of the relationship between carcass density and body composition in beef steers. J. Anim. Sci. 28:1
- Harpster, H. W., D. G. Fox, W. T. Magee and J. R. Black. 1978. Energy requirements of cows, and the effects of sex, selection and crossbreeding on feedlot performance of calves of four genetic types. Mich. Agr. Expt. Sta. Res. Rpt. 353.
- Harpster, H. W. 1978. Energy requirements of cows and the effect of sex, selection frame size and energy level on performance of calves of four genetic types. Ph.D. thesis, Mich. State Univ., East Lansing.
- Klosterman, E. W. and C. F. Parker. 1976. Effect of size, breed and sex upon feed efficiency in beef cattle. Ohio Agr. Res. Dev. Ctr. Res. Bul. 1088.
- Lomas, L. W., D. G. Fox, W. G. Bergen and J. R. Black. 1978. The effect of anhydrous ammonia treated corn silage and protein supplementation strategy on the performance of growing and finishing steers. Mich. Agr. Exp. Sta. Res. Rpt. 353.

- Madamba, J. C. 1965. Effects of breed type, diet, energy level, stilbestrol, and slaughter weight on performance and carcass composition. Ph.D. thesis, Univ. of Illinois, Urbana.
- McPeake, C. A. 1977. Phenotypic material correlations and the effect of selection and crossbreeding in commercial cow herds. Ph.D. Thesis, Michigan State Univ., East Lansing.
- Minish, G. L. and D. G. Fox. 1982. Beef Production and Management. 2nd Edition. Reston Publishing Co., Reston, VA 22090.
- Reid, J. T. 1962. Energy values of feeds - past, present and future. In dedication ceremony of Frank B. Morrison Hall and Symposium, Animal Nutrition's Contributions to Modern Agriculture. Cornell University, Ithaca, NY.
- Reid, J. T. 1978. Chemical growth and its analysis. Animal Sci. Mimeo, Cornell Univ., Ithaca, NY.
- Smith, G. M., D. B. Foster, L. V. Cundiff and K. E. Gregory. 1976a. Characterization of biological types of cattle II. Post weaning growth and feed efficiency of steers. J. Anim. Sci. 43:37.
- Woody, H. D., D. G. Fox and J. R. Black. 1978. The effect of ration grain content on feedlot performance. Mich. Agr. Exp. Sta. Res. Rpt. 353.

BODY COMPOSITION AND CONSUMER ACCEPTABILITY

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To the commercial cattle feeding industry, body composition relates to "value" inasmuch as (a) the proportion of live weight that is as dressed carcass--the dressing percentage--determines carcass cost and (b) the proportion of carcass weight that is as muscle of acceptable quality--the yield grade and quality grade of the carcass--determines carcass value.

As is well known, dressing percentage is determined by the interactions of fill, finish, muscling and refinement as they relate to the relationship between carcass weight and live weight. Dressing percentage is an extremely important consideration in purchases of live cattle where transfer of ownership takes place prior to slaughter and will continue to be of vital concern so long as someone sells live cattle to someone who accepts ownership and then slaughters them and sells their carcasses. Dressing percentage will be higher in cattle which have (a) lower proportions of their live weight in contents of the gastro-intestinal tract, (b) higher amounts of fat in and on their carcass, (c) higher muscle to bone ratios and (d) lower proportions of their live weight as head, hide, lower legs, and other dress-off items. Of these, variations in fill can cause the widest differentials in dressing percentage. If and when fill is held constant, differences in finish, muscling and proportions of dress-off items can be used to make meaningful evaluations of animals according to their expected dressing percentages.

Dressing percentage is of vital concern to the packer because of its relationship to carcass cost. Assume, for instance, that Choice-3 carcasses can be sold by the packer for \$1.16 per pound. If the packer buyer purchases two 1000 pound Choice-3 steers, both for \$.70 per pound on a live-weight basis, and one dresses 61% (steer A) while the other dresses 63% (steer B), the break-even price or carcass cost for steer A will be \$1.15 per pound and for steer B it will be \$1.11 per pound (Table 1). Obviously, such differences in carcass cost determine success vs. failure and profit vs. loss of purchases of live cattle. While it can be argued that use of dressing percentage is an antiquated concept that encourages overfattening of cattle its importance to and use by industry is very real.

Yield grade and quality grade of a slaughter steer determine its value (at a given weight) because grades determine carcass value.

Table 1. Effect of differences in dressing percentage in determining carcass cost (per pound) of steers purchased at the same price (per pound) alive.

Dressing percentage	Carcass cost (per pound) ^a
58	\$1.207
59	\$1.186
60	\$1.167
61	\$1.148
62	\$1.129
63	\$1.111
64	\$1.094

^aUsing a live price per pound of \$.70

Table 2. Fat percentages for carcasses of different USDA yield grades

USDA yield grade	Trimmed to one-half inch	Trimmed of all fat
1	9.1	20.8
2	14.0	29.6
3	17.7	34.9
4	21.0	39.1
5	25.0	43.7

Source: Murphey et al. (1982); Texas Agr. Exp. Sta.

Historically, it has been the Choice steer that was the desired end-point of commercial cattle feeding; more recently, the yield grade specification has been added to the desired quality grade such that a Choice-3 steer is the commodity sought. Feeding of a steer to achieve a certain yield grade at the expense of not achieving a certain quality grade is, at present, more realistic than would be the opposite scenario. That is the case because the industry has very recently realized that fat, in excess of that quantity necessary to achieve the desired attributes of quality, prevention of shrinkage and palatability, is a great deterrent to sale of beef at retail. Beef carcasses of yield grade 3 contain more than one-third fat (Table 2); fat is expensive to produce and is becoming more and more difficult to sell. As a result, lean beef is in great demand and Good-grade steers of yield grades 1 and 2 are selling, in many markets, for prices at or near those of Choice quality and yield grade 3.

Once a decision is made to reduce the fatness of animals of any species producing red-meat, it is incumbent upon that industry to draw a bottom line identifying the minimum level of fatness at which the quality of their product will not be compromised. Science has demonstrated that the minimum fatness necessary to achieve satisfactory palatability in beef is best quantified by requiring either a "Small" amount of marbling or, in lieu of that, by requiring a combination of a "Slight" amount of marbling and an external fat covering that is 0.30 inch thick at the 3/4 measure opposite the ribeye at the 12th rib (Tables 3 and 4). Both marbling and subcutaneous fat thickness serve as general indicators that the steer has consumed enough energy (usually from grain) to produce beef of acceptable flavor and to have sufficient insulation (in the form of fat) to prevent muscle fibers from shortening (and toughening) in response to the cold environment present as the carcass goes through the rigor mortis (death stiffening) process.

Research evidence (Table 5) which demonstrated that the feeding of steers for 100 or more days on a high-energy diet assured production of beef of "acceptable" palatability has provided impetus to attempts to produce beef that is leaner than that of the present Choice grade. The importance of defining a minimum feeding period (time-on-feed) necessary to assure product acceptability is magnified greatly when interest rates are unrealistically high (as they presently are) and when leanness is at a premium.

Central to success in commercial cattle feeding is the premise of producing cattle of the desired composition. Attaining the desired composition (whatever that may be for the particular market involved)

Table 3. Percentages of steaks rated as "acceptable" or higher from carcasses with different fat thicknesses (3/4 measure opposite the ribeye at the 12th rib)

Fat thickness (inches)	Cattle fed 0 to 230 days	Cattle fed 100 to 130 days
Less than .20	58	75
.20 to .30	75	86
.30 to .40	90	96
.40 to .50	92	95
.50 to .60	90	96
.60 to .70	94	90
.70 or more	96	97

Sources: Dolezal et al. (1982), JFS 47:397
Tatum et al. (1982), JAS 54:777

Table 4. Overall palatability ratings assigned to loin steaks by 871 consumers

Marbling score	Fat thickness (inches)	Overall palatability rating
Moderate	.10 to .80	13.8 ^a
Modest	.10 to .80	13.7 ^a
Small	.10 to .80	13.2 ^b
Slight	.30 or more	13.0 ^b
Slight	Less than .30	12.3 ^c

Source: Gawlik et al. (1982); Texas Agr. Exp. Sta.

Table 5. Percentages of steaks from steers fed for different periods that were "acceptable" or higher in overall palatability.

Time-on-feed (days)	Study I	Study II
0	---	51
30	---	59
60	---	70
90	---	63
100	92	93
130	94	91
160	94	93
200	---	95
230	---	97

Sources: Tatum et al. (1980); JAS 50:833
Dolezal et al. (1982); JFS 47:397

Table 6. Priority of nutrient utilization by tissues, body locations and fat depots in growing animals.

TISSUE	BODY LOCATION	FAT DEPOT
(A) NERVOUS	(A) HEAD	(A) KIDNEY KNOB
(B) SKELETON	(B) NECK & SHOULDER	(B) SEAM
(C) MUSCLE	(C) HIND LIMB	(C) EXTERNAL
(D) FAT	(D) LOIN & RIB	(D) MARBLING

is a matter of optimizing growth (of muscle and bone) and development (deposition of fat). The principles of growth and development that are applicable to production of a desirable slaughter steer are embodied in the application of three rules of thumb--"full-feed," "market when ready," and "do not hold."

Full-feeding (use of a high, versus medium or low, plane of nutrition) will result in production of the desired cattle most efficiently because it minimizes costs associated with maintenance requirements and interest on investment. Cattle with high inherent potential for growth will produce the desired carcass (as defined by yield grade and quality grade) most efficiently when fed on a high plane of nutrition. The latter conclusion is based substantially upon John Hammond's theory of the "priority of nutrient utilization" which says that of the nutrients present within the animal's body at a given point in time, they will be directed first to that tissue (nervous then skeletal then muscle then fat), body location (head then neck and shoulder then hind limb then loin and rib) or fat depot (kidney knob then seam then external then marbling) that is most essential to sustaining the animal's life (Figure 1; Table 6). If, and only if, needs of any or all more essential tissues, body locations or fat depots have been fulfilled will nutrients be directed to a less essential tissue, location or depot. Growth of muscle can be prolonged if the diet is manipulated in a manner that will provide only that quantity of nutrients that is sufficient to sustain nervous and skeletal tissues and to encourage muscle growth but not adequate to cause deposition of fat. Such diet manipulation (so-called "limited feeding") will cause animals to be more muscular and leaner at a given age and live weight (Figure 2) than they would normally be but this is accomplished at great expense and would essentially never be economically feasible in a feedlot program.

Desirability of a slaughter steer can be defined in terms of the composition--proportion of muscle, fat and bone--of its carcass. At some point in time or at some weight, an animal will produce a carcass of the desired composition; this can best be illustrated by the use of carcass-composition growth curves (Figure 3). For a half-century we tried to make all cattle attain the desired composition (for example, 55% muscle, 33% fat and 12% bone in the 1950's) at a live weight of about 1000 pounds. By the middle 1970's it had become obvious that this was a futile attempt--the influx of Continental European breeds made that impossible. Use of super-imposed carcass-composition growth curves illustrates the futility of such practice (Figure 4); optimal carcass composition will be achieved at a slaughter weight of 900 pounds for cattle of one type but at 1300 pounds for cattle of another

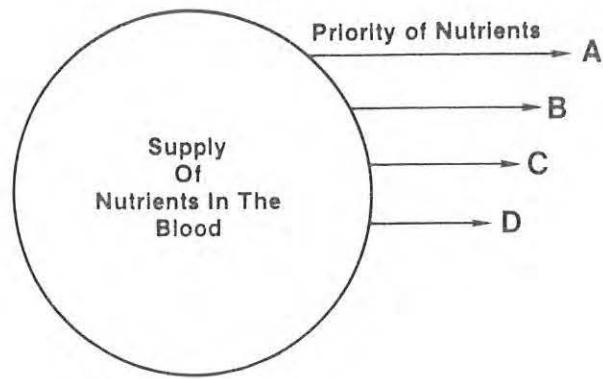


Figure 1.

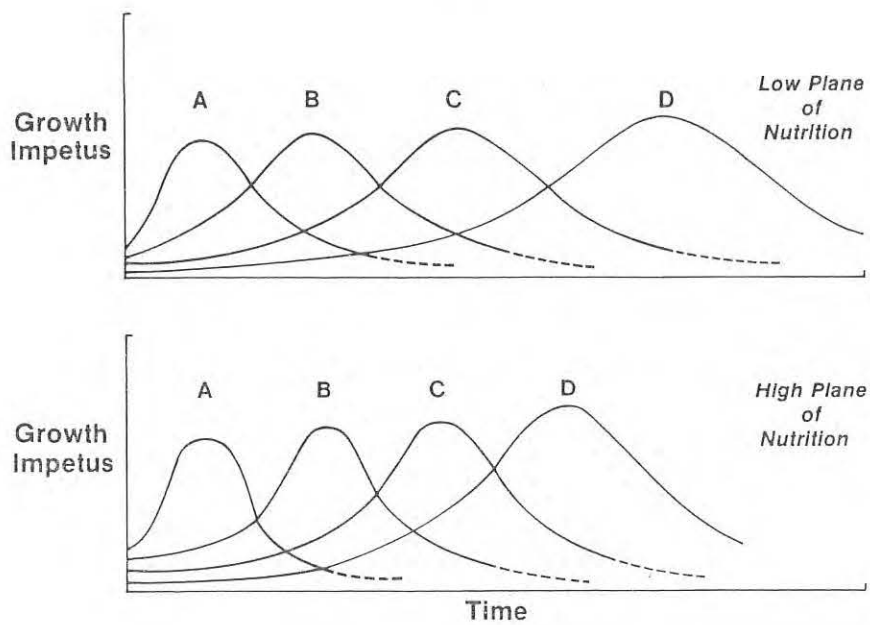


Figure 2.

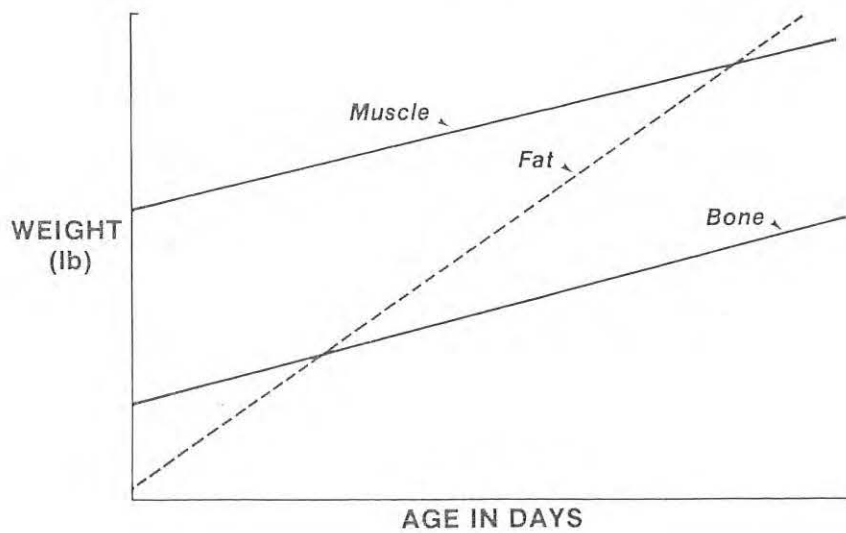


Figure 3.

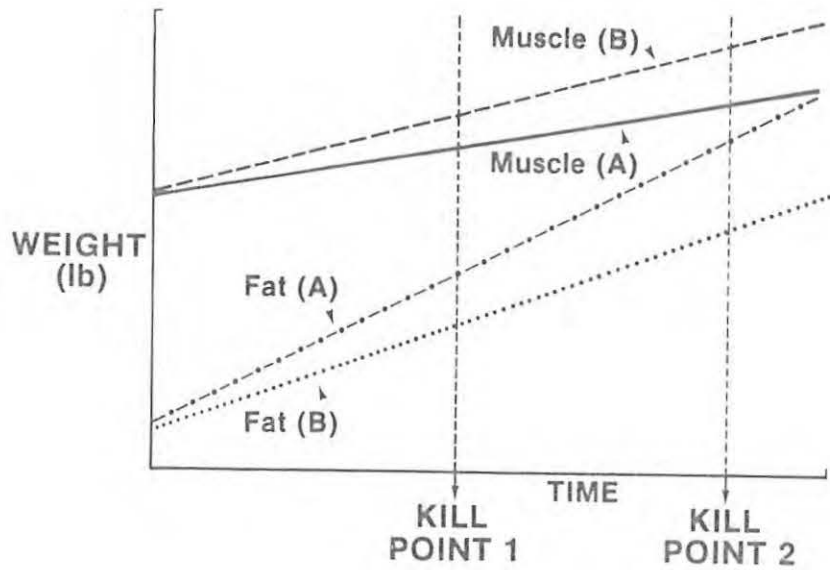


Figure 4.

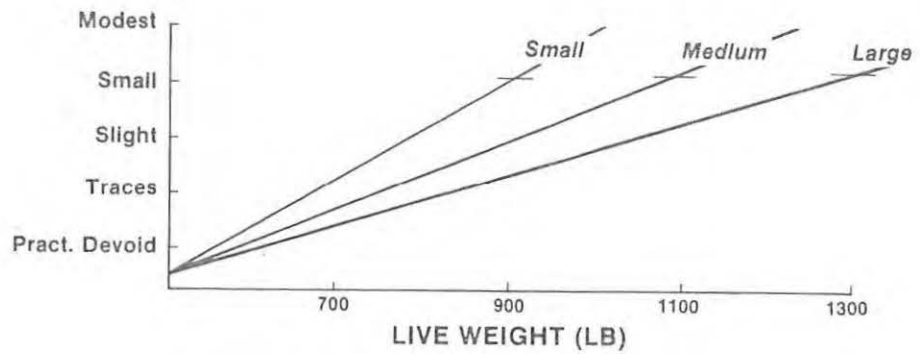


Figure 5.

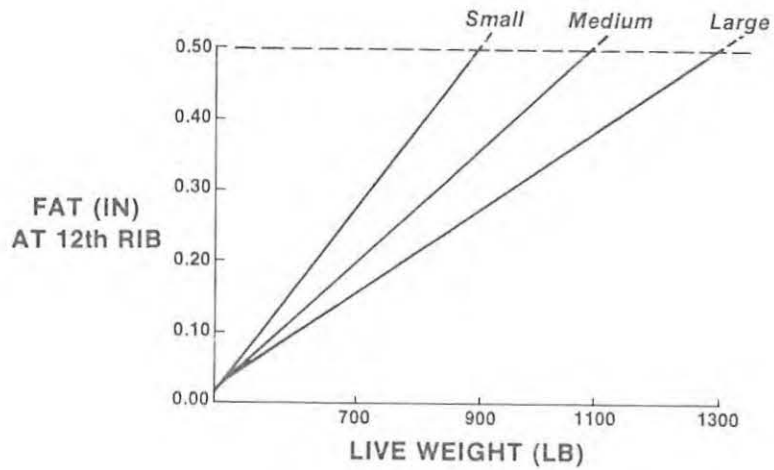


Figure 6.

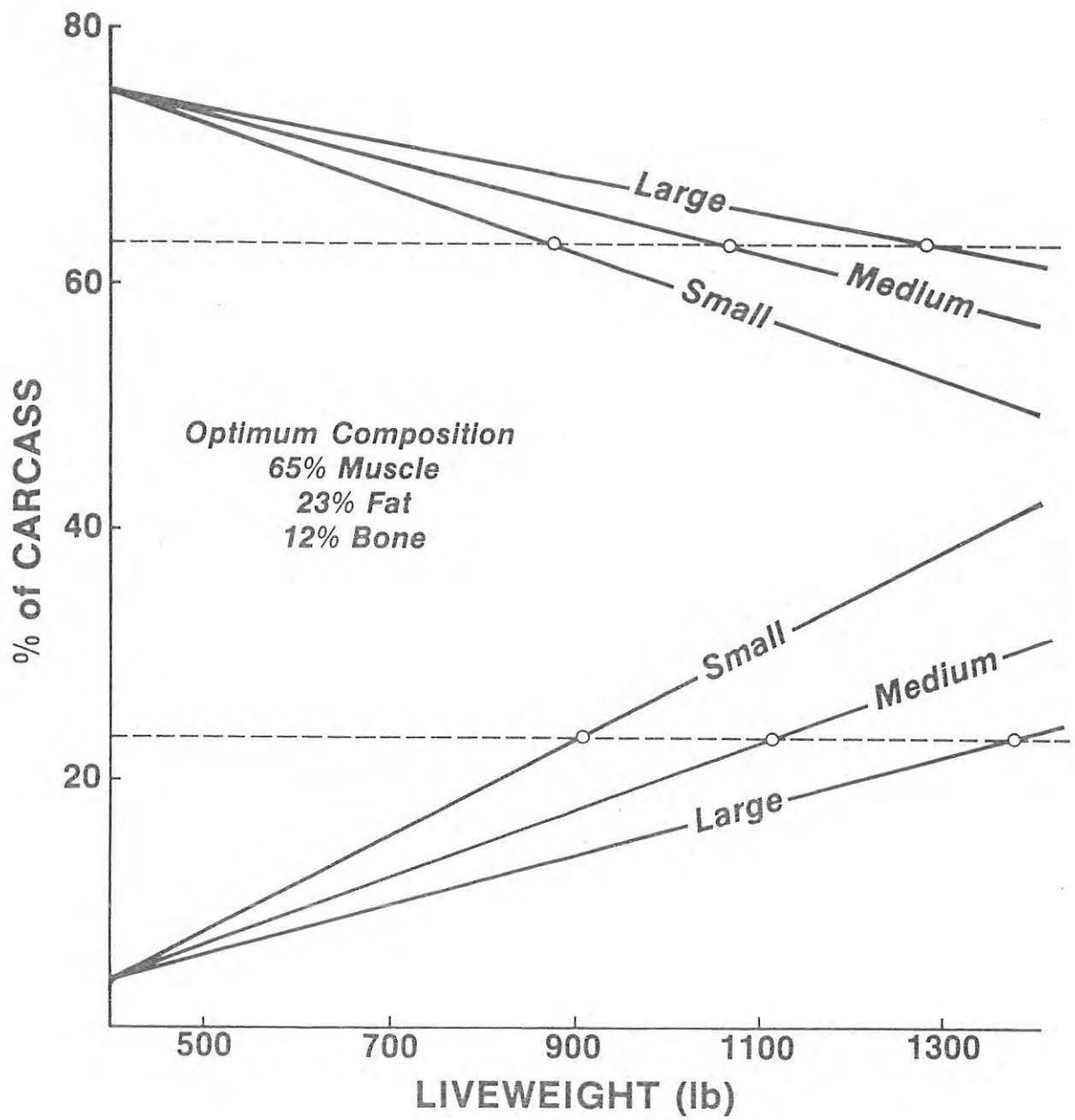


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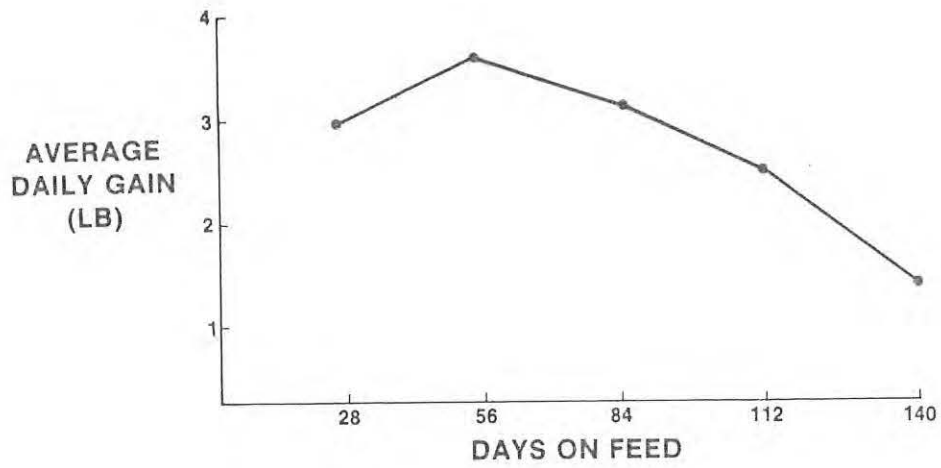


Figure 8.

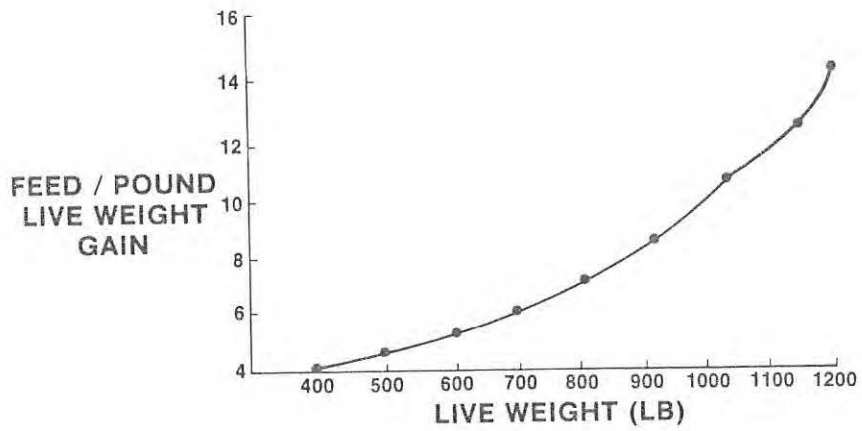


Figure 9.

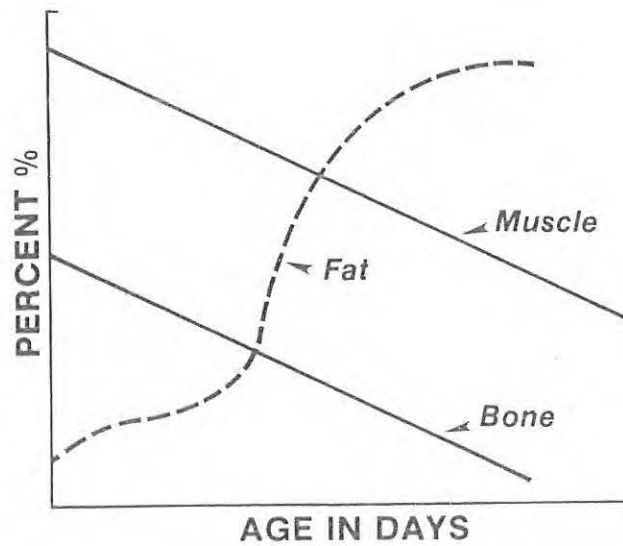


Figure 10.

type. Research on this premise led the USDA in 1979 to adopt a system for the grading of feeder cattle that recognized the existence of cattle of three types--small, medium and large frame sizes--that should be slaughtered at greatly different live-weights in order to achieve production of carcasses with a "Small" amount of marbling and 0.50 inches of external fat thickness (Figures 5 and 6). That same premise could be applied to achieve production of cattle that would have carcasses of a certain composition in terms of percentages of muscle, fat and bone (Figure 7).

Failure to slaughter a steer or heifer at the weight or after the period of feeding commensurate with its production of the desired carcass will cause serious management or marketing problems. The principle "do not hold" is predicated upon substantial decreases in average daily gain (Figure 8), feed efficiency (Figure 9) and leanness (Figure 10) that accompany attempts to continue to feed cattle after they have attained optimal carcass composition. For precisely those reasons, commercial cattle feeders attempt to market feed cattle as soon as they have had adequate opportunity to express their genetic potential to produce the desired carcass.

COMPARISON OF COMMERCIAL CATTLE FEEDING AND STEER SHOWS

For purposes of debate and discussion at this Symposium, I offer the personal opinion which follows, regarding other relationships between commercial cattle feeding and steer shows. This is not to say that it should be this way but to say that this is how I believe it is.

Steer shows are not now nor have they been (for at least the last 40 years) indicative of things that are of practical significance to the commercial cattle feeding industry. Use of nurse-cows, cutting of ties, airing-oiling, heat lamps-rolling pins of my day (1952-1955) and of use of diuretics, dyeing of hair and lacing of briskets of the present time (1982) are not of practical significance to the commercial industry. I asked Kenneth Monfort, who followed a very successful high school show-ring experience with a career in commercial cattle feeding and in operating a very large beef packing company, two questions: (1) To what extent did your experience in fitting and showing steers in high school help you in becoming one of the nation's largest cattle feeders? and (2) To what extent do you now look to the nation's show-ring in providing guidance regarding the manner in which you feed cattle and/or regarding the type or kind of slaughter animal you should produce? His answer to both questions was "None, whatsoever!"

What, then could be done to make steer shows more practical and

of greater value to the commercial cattle feeding industry? Again, for purposes of discussion, I offer the personal opinions which follow, regarding possible improvements in steer shows:

- (1) Steer shows should emphasize those things that are of greatest concern to commercial feeders--performance (average daily gain, feed efficiency), dressing percentage and period of feeding (as it relates to equity, commodity costs and interest on investment).
- (2) Things presently given credence in judging show steers that are of minimal importance to commerce--style, balance, structural correctness--should be de-emphasized.
- (3) Present emphasis on large-framed, very tall steers of only certain breeds should change because it ignores the fact that there are steers of other frame sizes and heights and breeds that are of tremendous consequence to industry, because they also perform well and produce highly desirable carcasses.
- (4) Carcass characteristics should be more than merely an afterthought in producing and in judging show-steers; many steers presently winning shows will not produce a desirable carcass.
- (5) Penalties for proof of use of diuretics, surgical alterations and dyeing should be sufficiently punitive to discourage such practices.
- (6) Honesty, integrity and fair-play should of paramount importance in steer shows.

STRUCTURE AND EYE APPEAL - IN BEEF CATTLE EVALUATION

R.A. LONG

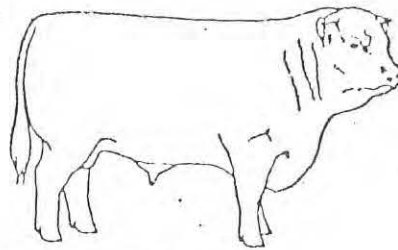
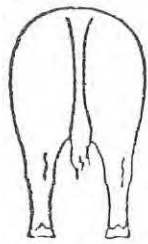
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INTRODUCTION

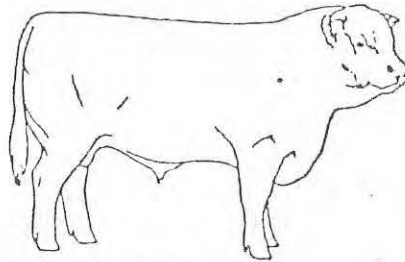
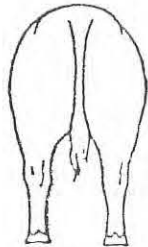
The accurate evaluation of slaughter cattle is important in several phases of the beef cattle industry. Both the feeder and packer buyer can make more intelligent decisions if they are able to accurately predict the quality and cutability of the carcasses resulting from the slaughter of specific individuals or groups of cattle. Likewise, purebred breeders should evaluate seedstock in this manner in view of the high heritability of carcass traits. Even in the show ring, both breeding and slaughter classes should be largely evaluated on the basis of accurate estimates of carcass characteristics. However, some breeders, feeders, packers and live animal judges currently use evaluation criteria of doubtful accuracy in their appraisals. Examples are the various estimates of skeletal size such as height and length of body often referred to as "elevation", "stretch" and "scale", the implication being that the greater the skeletal size, the more desirable the animal. Further measures of bone are such terms as "ruggedness" and "heavy bone", as determined by visual estimation of the circumference of the cannonbones and their overlying tissues. Here again the suggestion is that larger is more desirable. Muscling is also referred to by such terms as "length", "smoothness" and "pattern", all terms which imply desirability but which have no demonstrated contribution to superior composition of bovine meat animals.

STRUCTURE

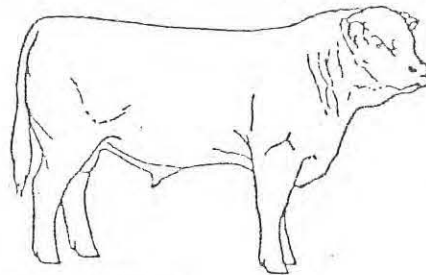
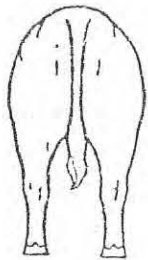
My subject today is concerned with structure. The word "structure" implies a fixed plan or organization. This is exactly the case with the



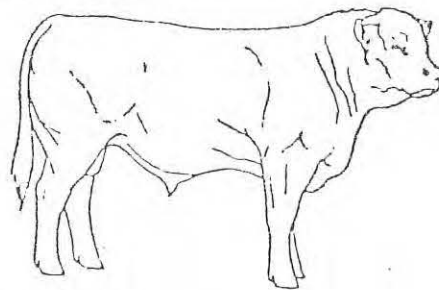
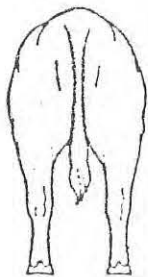
BODY TYPE 1



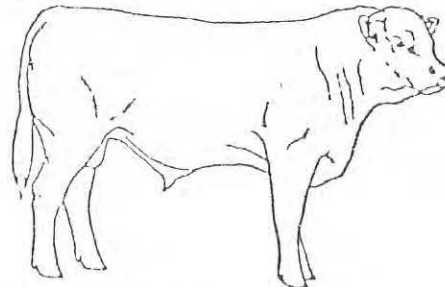
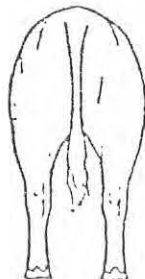
BODY TYPE 2



BODY TYPE 3



BODY TYPE 4



BODY TYPE 5

Figure I. Body types.

structure of steers or all beef cattle for that matter. All steers in the world are made according to the same plan or design. They are composed of a skeleton, the number of the bones of which is constant, as is the general shape of each bone. Also, the percentage of weight or linear size that each bone represents of the whole skeleton is constant. Butterfield (1964), Kaufman (1973), Ramsey (1976).

About ten years ago, a National field day was jointly sponsored by a different breed association and the University of Wisconsin in each of three consecutive years. Each breed selected different "types" of steers which were placed on feed and when ready for market were slaughtered, and a field day was built around the data collected. Some good things came out of these sessions but unfortunately, that which has received the most attention and is still with us are the profile drawings in Figure I, which is entitled "Body Types." Note that "body type #1" is shortbodied and lowset and shows heavy development in the dewlap, brisket and belly, and great proportional depth of body. Also, observe that "body type #5" is tall and long and is a trim fronted, tight middled kind. The implication here is that all small framed cattle are wasty and fat and all large framed cattle are trim and desirable. Nothing could be further from the truth.

I do not believe that such a thing as a body type exists. I believe, and will offer evidence to prove, that every frame size of beef animal can and does occur with every possible combination of fat and muscling. Some small framed cattle are highly desirable in composition - some are not. Some large framed cattle are desirable in composition - some are not. The same can be said for any frame size.

I want you to look at the data from three steers in table I. Their weight is very different but their skeletons are practically identical in size, which is, of course, their frame size. Now examine the dissection

TABLE I: MUSCLE:BONE RELATIONSHIPS AMONG SLAUGHTER STEERS

LIVE MEASUREMENTS

	Steer #	1	2	3
Live wt. (lbs.)		1450	1300	1005
Length of Body (in.)		60.23	60.23	59.84
Rump Length (in.)		20.07	20.07	20.47
Ht. Withers (in.)		51.96	51.57	52.36
Ht. Hips (in.)		53.54	53.14	53.93

TABLE II: MUSCLE:BONE RELATIONSHIPS AMONG SLAUGHTER STEERS

DISSECTION DATA

	Steer #	1	2	3
Lbs. of Bone		64	68	67
% Bone		13.1%	16%	23%
Lbs. of Muscle		320	262	168
% Muscle		66%	63%	59%
Lbs. of Fat		104	81	53
% Fat		21%	19%	18%
Muscle:Bone		5.01	3.88	2.52
Muscle:Bone IM Fat Included		5.16	3.94	2.61

TABLE III: MUSCLE:BONE RELATIONSHIPS AMONG SLAUGHTER STEERS
CARCASS MEASUREMENTS

	Steer # 1	2	3
Carcass Wt.	976	820	570
Dress %	67%	64%	57%
Maturity	A ⁷⁵	A ⁵⁰	A ⁷⁵
Marbling	Small ³⁰	Slight ⁸⁰	Slight ⁶⁰
Quality Grade	Ch ⁻	Gd ⁺	Gd ^o
Fat thickness (in.)	.3	.3	.12
Rib Eye Area (Sq. in.)	18.1	14.3	9.9
% KIP	3.0%	2.5%	2.5%
Yield Grade	1.8	2.3	2.3

data in table II. Not only were their skeletons identical in linear measurements, but their skeletons weighed the same. However, here the similarity stops. Note the tremendous difference in muscle both in total weight and as a percentage of the carcass of the #1 steer. This gives a muscle:bone ratio of just twice as much for the heavily muscled steer as is the case with the thinly muscled one. Fat varies only a little in this case but keep in mind that it would be easy to put together a large group of steers with identical skeletons that vary widely in fat and muscle composition. Table III lists the conventional carcass measurements. This table makes two major points.

1. The Yield Grade formula ranked these three steers essentially the same, which is obviously in error. This is because the formula was constructed with conventional British breeds which did not offer the range in muscling we have here. It under evaluates the heavily muscled #1 steer, over evaluates the thinly muscled #3 steer and does a good job on #2.
2. The frame size or skeletal size of these steers had nothing to do with the desirability of their carcasses.

I would hope that your conclusion would be something like mine which simply stated is: Why anyone would use frame size in the evaluation of cattle for slaughter is beyond me. Yet, that is exactly what takes place in the majority of steer shows in this country - they put the tall ones up. Think what this means. The cattle are shown by weight and most of them have been fed and managed in such a way that they are not excessively fat. Therefore, placing the tall, big framed steers up in class and the small framed ones down means that selection was against muscle or meat which makes no sense at all in the beef production business. The placing of the tall ones of the same weight on top of the class further complicates the situation.

Large framed cattle mature later which fact decreases the chances of the large framed steer making the choice grade.

What is the Value of Frame Size?

Skeletal growth or bone formation on growing animals takes priority for nutrients over fat deposition and even maximum muscle growth. Therefore, regardless of plane of nutrition, if we compare animals at the same age, their frame size has probably increased according to genetic potential and is a good measure of what their mature frame size will be. When compared at the same age, the larger the frame the larger it will be at maturity and the longer it will take to reach that point. Also, we know that as an animal approaches maturity, he begins to deposit fat in the muscle, which is the marbling that puts him in the choice grade. This is the very basis for the new U. S. D. A. Feeder Grades which separate cattle into large, medium and small frame sizes. If cattle of the same age are sorted into uniform frame size groups, each frame size will reach the choice grade after a different length of time on feed. The larger the frame size, the longer the feeding period required to grade choice.

Of course, this same principle works on breeding cattle and if they are compared at the same age and are of the same sex, the larger framed animals will be larger at maturity and likewise require longer to reach maturity. Therefore, if your only goal is size at maturity, go for frame size. Remember, frame size tells you nothing about the composition of the carcass, growth rate or reproductive efficiency.

Most people currently measure frame size (or think they do) by measuring height at the withers and/or hips. Figure II illustrates how misleading this can be. Note that these are identical skeletons except for the angle of the leg joints, yet the one on the right measures considerably taller at the withers and hips. Fortunately, this is no problem since research work by Ramsey (1976),

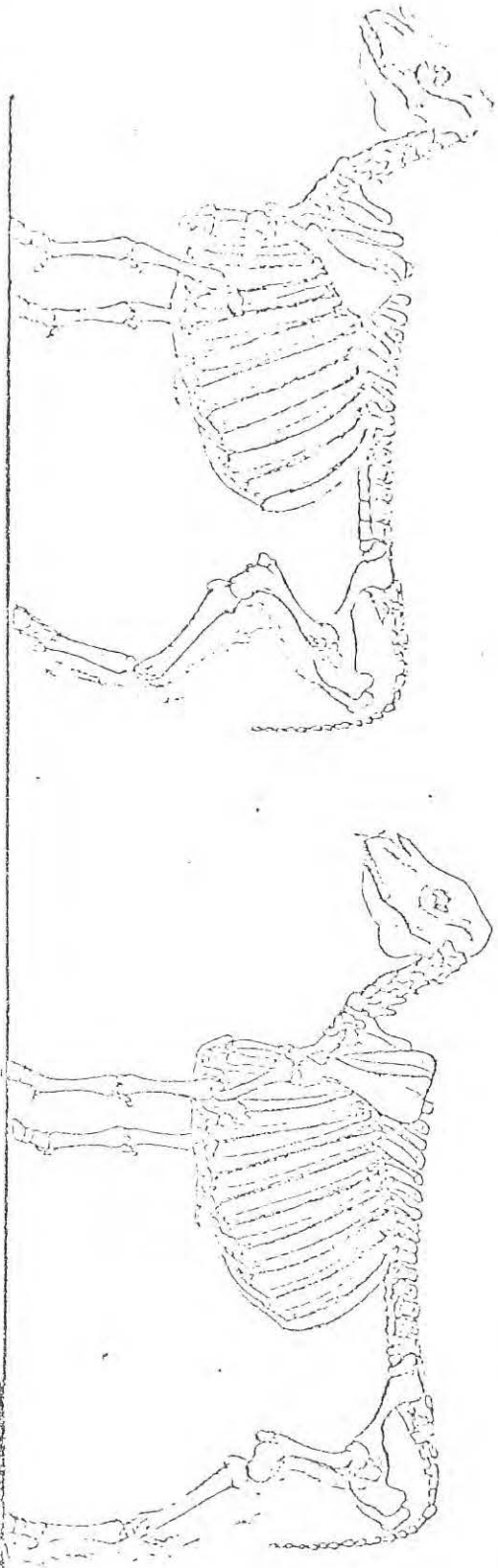


Figure II. Identical skeletons showing the effect on height at the withers and hips of changing the angle of movable joints of the long bones of the legs.

Butterfield (1964) and Kaufman (1973) have all observed that the bovine skeletons occur in constant proportion. Therefore, you can accurately compare frame size on cattle by actually measuring or visually estimating a single bone in the leg of each. If one bone is longer every other bone in the skeleton will be longer and proportionately so. Remember, this is only valid if the cattle are of the same age and sex. You must compare bulls with bulls, steers with steers (castrated at the same age) and heifers with heifers, because at puberty the level of sex hormone production changes greatly and results in closure or calcification of the epiphyseal groove and the length of the leg bones stops increasing.

When scoring cattle for size of frame, actual weight should not be considered. Weight is recorded by the scales and is a separate performance measure. Skeletal size is the point to be considered.

Let us look at some additional data on measurements of the skeleton. We measured 88 head of steers the day before they were slaughtered and then collected detailed carcass data including specific gravity of the whole carcass and complete dissection into boneless, closely trimmed retail cuts plus ground beef. These data are shown in Table 4. Note that all linear measurements are positively and significantly associated with carcass weight. This is no surprise and is just a function of size. Even big trucks are, on the average, longer and taller than little trucks. Essentially the same is true of dressing percentage but remember this tells us nothing. Some steers dress high because of muscle and some dress high because of fat, Kaufman (1976). These linear measurements are also positively associated with yield grade and ribeye area. This is also a function of size since the yield grade formula penalizes heavier cattle regardless of their composition and big cattle have big ribeyes on the average just as big trucks have bigger tires.

Now note particularly that the 3 best measures of value of a carcass are marbling score or quality grade, specific gravity as a measure of fatness and boneless, trimmed retail cuts % which is the best measure of the 3. In each of these areas there is no association, none at all, with linear measurements of live cattle. Your conclusion should be - don't use frame or skeletal size in evaluating slaughter cattle.

Whenever I use the statement, "Don't use frame size in the evaluation of slaughter cattle", I can predict the responses. They are, "Modern steers are more feed-efficient and more profitable for the cow-calf man and the feedlot operator". "University tests show conclusively that frame size is closely correlated with a steers ability to grow". I submit, gentlemen, that these statements are simply not true. The data that shows an advantage for large frame size in rate and efficiency of gain is the result of killing cattle at constant weights or at constant length of feeding period. When cattle of the same age

TABLE 4. SIMPLE CORRELATION COEFFICIENTS OF
LIVE MEASUREMENTS WITH CARCASS TRAITS

	Live Measurements ^a					Fore- cannon circum- ference
	Height at withers	Height at hips	Rump length	Body length	Fore- cannon length	
Carcass weight	.59***	.67***	.66***	.71***	.54***	.71***
Dressing percent		.25**	.51***	.41***	.27**	.23*
Maturity score			-.22*			
Marbling score						
Yield grade	.31**	.22*	.43***	.27**	.22*	
Fat thickness			.31**			
Kidney, pelvic and heart fat, %	.26**				.27**	
Ribeye area	.25*	.32***		.28**	.20*	.52***
Specific gravity						
Fat trim, %	.27**		.35***	.21*		
Bone, %	.40***	.40***			.43***	
Retail cuts ^b , %	-.22*					

^aN = 88.

^bBoneless, closely-trimmed retail cuts plus ground beef.

*P < .05.

**P < .01.

***P < .001.

TABLE 5.
 MEANS OF ADG AND FEED EFFICIENCY FROM SMALL,
 MEDIUM AND LARGE FRAMED FEEDER CATTLE

Group	Trait	
	ADG	Feed to gain
Small Framed	1.2 ^a	8.5 ^a
Medium Framed	1.2 ^a	9.2 ^a
Large Framed	1.2 ^a	8.7 ^a

a,b,c Means in the same column with different superscripts are different (P<.05).

^dADG and Feed to Gain are expressed in kg.

and condition but of different frame sizes are fed to the same stage of physiological maturity or the same quality grade their rate and efficiency of gain tends to be the same. The data in Table 6 compares the performance of small framed, medium framed and large framed steers fed 150, 180 and 220 days respectively. They all graded 70% choice. Had they all been killed at the same weight or after the same time on feed this would not have been true. That is the very reason for sorting feeder cattle by frame size, not by weight when they go on feed. Rate of growth in beef cattle is a heritable trait and is improved by selection for growth rate not how far the cattle "stick up" in the air. An example is the strain of Angus cattle bred by Martin Jorgenson. His cattle are not the tallest Angus cattle in the world but don't get in a growth race with them unless you want to get beat.

So much for size of frame or structure, now how about soundness of that structure. Some say, "The ideal steer needs to have large, symmetrical feet that are deep at the heel. His legs must be correctly placed on all four corners and he should move off with a free, easy, long stride since a steers inability to walk would hamper his performance in the feedlot". That's ridiculous. In the first place he has already "walked" in the feedlot when you see him. More importantly, the steer you see in the show ring probably had his feet trimmed 3 or 4 times during his life by an expert at corrective podiatry, a professional blocking job on his legs and joints and could well have his joints loosened by dexamethazone and the pain masked by "butazolidin". And you're emphasizing structure? Don't be naive. The steer won't reproduce anyway. If you must consider soundness take one with some slope to his shoulder and angle at his hock. Every cattleman, horseman, hogman & sheepman worth his salt knows that straight shoulders, steep pasterns and post-legs are predisposed to injury.

Finally, I hear references made about a steers rump. A typical statement would be, "This steer slopes off at his rump and is narrow at his pins.

Therefore, his sisters would have calving troubles and not be productive in the breeding herd. Gentlemen, listen carefully, boys and girls are not shaped the same way. Besides the sloping rump is a lean one and the square rump you like is a "fat rump" and should be discriminated against.

MUSCLING

Now we'll stop picking the bones and talk about the muscle - the meat we eat. We hear a great deal about the "kind" of muscle on cattle and the favorite terms are "the right kind of muscle" or "that good, long, smooth muscle". Fortunately, there is only one "kind" of muscle. It is composed of muscle fibers bundled together by connective tissue and attached by connective tissue and tendons to other muscles and to the skeleton. The "length" of the muscles is determined by the size of skeleton since each muscle is attached to the skeleton at the identical spot in all cattle. Therefore, cattle of equal frame size have the same length of muscle. "Smooth Muscle" is a term used to describe cattle that have a layer of subcutaneous fat or are thinly muscled, or both.

Just as the skeleton is in the same proportion, each muscle in its anatomic entirety represents a constant percentage of the total muscle mass. This is well established by both Berg (1927) and Kaufman (1976) and is the basis for estimating total muscle by examining a steer for degree of muscling over the forearm or through the stifle. Let's face it, a steer cannot produce an excellent carcass without being well muscled. This, of course, adds to his weight & when finish is constant the heavily muscled steer far outweighs the "smooth" muscled steer of the same frame size. Therefore, a large framed steer will be considerably heavier than the packer wants if his composition is correct.

You will recall that we have pointed out that both the skeleton and musculature occur in essentially the same proportion in all steers. This results in a near constant percentage of carcass weight in each of the wholesale cuts. For example, a heavily muscled Limousin steer has the same percentage of hindquarter

as the thinnest muscled Jersey steer. Cattle just don't possess "more weight in the high priced cuts". The difference is in the percentage of meat, fat and bone in each cut. The data which illustrates the constant proportionality of skeleton and muscle has often been misinterpreted to mean that all cattle are the same and if you measure them the longest or largest is the best. This is in complete error. You must know muscle:bone ratio and degree of fatness in order to know composition.

SUMMARY

Currently, steer shows lack credibility in the beef industry. This is true, I fear, because we have tried to performance test in the showring by criteria that do not measure performance.

The purpose of the steer show, as I see it, is to identify the kind of a steer that hangs the most desirable carcass from the standpoint of both palatability and cutability. Then it becomes the job of breeders, feeders and packers to develop genetic, nutritional and processing programs which produce such carcasses efficiently and profitably. I believe we have the "know how" to do this job.

The ideal steer must have a high muscle:bone ratio, a maximum of .3 inches of fat, choice marbling and be in the 1050 - 1250 weight range. How far he "sticks up" in the air should not be a factor.

LITERATURE CITED

- Butterfield, R.M. 1964. Relative Growth of the Musculature of the Ox. Carcass Composition and Appraisal of Meat Animals, D.E. Tribe (Ed.) The Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia. p. 7-1.
- Kaufman, R.G., R.H. Grummer, R.E. Smith, R.A. Long and G. Shook. 1973. Does live animal and carcass shape influence gross composition? J. Anim. Sci. 37:1142.
- Kaufman, R.G., M.D. Van Ess and R.A. Long. 1976. Bovine Compositional Interrelationships. J. Anim. Sci. 43:102.
- Ramsey, C.B., R.C. Albin, R.A. Long and M.L. Stabel. 1976. Linear Relationships of the Bovine Skeletons. J. Anim. Sci. 42:221 (abstr.).

The Judge's Perspective

This is an extremely important segment of our program because these are the fellows who are in the firing line. Steer judges have the responsibility of setting steer type so to speak in our major steer shows. The judges appearing as the judging panel today has several things in common. They are outstanding judges, highly respected by the industry and they have judged and continue to judge the major steer shows in the U.S. So obviously they exert an important influence. They have all coached very successfully livestock judging teams and in their total capacity do have occasion to see and evaluate many steers and many championship steers.

Bill Jacobs, Animal Science Dept., California Polytechnic, San Luis Obispo, California

Well Bob I hope you understand and everyone here understands how difficult this assignment is. If I was a research scientist, I could come up here and show some charts. I think I could get by a little better and try to defend some of the mistakes made in the past in the steer arena. And definitely there has been some mistakes made. I'm going to talk a little bit about the philosophy of the steer shows from the point of view of a steer judge.

If we are to face reality, this type of symposium would not be needed if steer shows would measure up to the expectations of all involved in the livestock industry. Many involved in this industry see steer shows as nothing more than an exhibition of extremes that have no relationship to what is being fed in feedlots across this country. It is my feeling that judges, producers and exhibitors all hope in the future some creditability can be obtained in the steer arena.

We have all witnessed a great deal of emphasis placed on two traits in the past -- carcass merit and frame size. We have all heard of many champions that did not grade choice and many champions that would need to be fed in excess of 200 days to grade Choice because of their extreme frame size. Most judges have found it very difficult to predict carcass merit, yet these same judges have been very successful in evaluating body type. The end result is the large frame steer is being questioned in regard to his usefulness in an industry that is going in the direction of fewer days on feed.

As I look back over the past ten years and consider the "supposed" progress made in the selection of purebred cattle, I feel this progress has been beneficial. The change made during this period and the most expensive trait to produce has been frame. This trait relates to more performance and leaner beef. It takes an extreme change in purebred livestock to make a small change in commercial production.

Somewhere along the line, however, we have forgotten that a steer cannot reproduce--he is terminal. His additional frame will contribute to his usefulness only up to a point. It is my thinking that whatever trait we select for will become a liability, not an asset, if we crowd nature too far. The 60" tall steer requires many days on feed, his heifer mates require additional days to reach puberty, and these days cost money.

Because of the "Big Steer" syndrome, exhibitors have been encouraged to manipulate weight. Weight manipulation has also been encouraged by judges who will only consider a champion that is within a very restricted weight range. Rather than asking a steer to fit into confined weight parameters, or ask a steer to lose 150 lbs three days prior to a show, would it not be better to assume all steers will kill an acceptable carcass if slaughtered at their proper end point. The proper end point is when frame, muscle and finish all come together at the same time. The packer wants muscle and adequate finish while the producer wants adequate frame for efficiency of gain. The key word here is "adequate." A word that in the past has not been accepted because it has been felt that a judge should give direction, look into the future and select the steer of tomorrow. I have no idea what the ideal steer will look like in 1990. I feel my responsibility as a judge is to put emphasis on what is needed today.

Some feel the only thing needed for an acceptable champion is for him to hang a carcass that will grade Choice. Like most judges I hope all steers I identify as a champion will grade Choice. Like most judges I understand my limitations in predicting this desired grade. Because Choice is not absolute and because Choice is not always synonymous with profit, it becomes only one of many characteristics to evaluate. Steer judges would be more accurate in predicting carcass grade if, like fat cattle buyers, they were given feed intake, kind of ration, and days on feed. It must be realized that steer judges are evaluating cattle that come from atypical backgrounds. If the judge is certain a steer will grade Choice, he is probably also certain that steer has an unacceptable cutability and has been inefficient to produce.

It has been a tradition in the show ring to give recognition to the far out, the immoderate. We have more genetic variation in beef cattle today than ever before. We have all the tools needed and all the parts available to design a variety of ideal steers. With the variation of these different parts to work with, would it not be logical to use parts that fit an industry in need of basic versatility? Over emphasis on any one part will make for an incomplete end product. Extremes can be manipulated; economically important traits are inherited.

I realize I have not drawn a concise picture of the ideal steer of today. I realize I could be easily misunderstood as being in favor of little cattle that don't grade Choice. To give an exact height, weight, and fat cover of the ideal steer is not realistic. All three things can easily be manipulated by the experienced exhibitor. The concept of relating these three variables to what is profitable to produce in slaughter cattle is more realistic. Let's remember a steer is terminal, forget this and steer shows themselves might be terminal. Any judge can identify a big, dried out steer. It is more difficult to select for useful parts that fit commercial production, but if we move in this direction the steer show of the future will have more creditability.

Bill Able, Animal Science Dept., Kansas State University

Some have said that we could breed the calf crop next year to produce the ideal steer the judges are looking for. I bet you could tell me the specifications of the ideal steer and I could get it for you in three days. If you don't believe that, go out and judge a steer show and see how many telephone calls your friends get to find out what type of steer you are looking for and they will produce what ever you are asking for. So for us to come up with some kind of a description of ideal steer we would really blow a lot of peoples minds, if we all started looking for the same things and I don't think we really want that.

We may have some people judging shows that disagree whole heartedly with me and maybe that is good. I think the reason we are here is that we have had to many steers that have been put up grand champion in shows and have a tenth of an inch backfat, weighed 1250, turned out 2 weeks and weighed 1650. If we look around the room several people are in attendance could be up here giving their discussion of the ideal steer. I feel its an honor for me to be chosen to speak to this group and give you what little information and maybe what I look for.

What is modern beef type? When we attempt to define such a broad area, we should attempt maybe to break down the phrase and understand its meaning. According to Websters New World Dictionary, the term modern means of, or characteristic of the present or recent times, up to date, not old fashion, or obsolete. The age old definition that is used in most text books, dealing with beef cattle or introductory ANSI, defines type as those characteristics which make an animal better suited for its particular purpose, which in this case means production of red meat. But when I start trying to tie all of these things together I start trying to put into my mind all the factors that would go into the production of economical beef. After a quick glance at some of the photos of champion steers since 1945, we can truly say that our forefathers also thought they had these

same goals in mind. However, we know that times and values change. The extremely short legged, short bodied, compact, overly fat beef animal has become obsolete. Spiraling feed costs, consumer preference for leaner beef and the need for higher performing animals has caused cattle men to look at their product with a very scornful eye. So with thoughts in mind, what I tried to do was to break down the old time honored adage that the feedlot industry produces choice cattle that are trim, that we don't see in the show ring.

We have a quite unique show in Kansas called the Beef Empire Show, which by the way is starting Thursday of this week, where cattle are brought in out of the feedlot and shown on foot. The first year Don Good judged the show they had a horse for him to ride through the cattle as they brought them to him. He evaluated the cattle and then they were slaughtered. They think in Kansas that Don Good is next to God. The first year he was there I think he hit them perfectly. Champion on foot was champion on the rail, Reserve Champion on foot was also Reserve on the rail. The second year he went back, the reserve was Grand and Grand was Reserve on the rail. He should have never went back. You and I both know what happened. The first year, the feedlots brought in cattle that had been on feed for probably 150 to 240 days. All Don had to do was select the trim cattle, put them up, they graded, and he did a super job. The next year he got away with the same thing. So what happened? The same thing that happens in the show ring. The feedlot people were seeing the type and shape of animal that it took to win, and that was a trim animal. So they went out in the feedyard and started bringing in cattle that were trim and hadn't been on feed long enough for them to develop enough internal fat or marbling for them to grade Choice. So they do the same thing in the feedlot as we do in the show. They bring you what you want to see. I think that is one thing we have to get across in this symposium, is that you as a judge dictate what people bring for you to look at. That is the most true thing I could say the rest of the day.

I know everybody gets a nickname as a judge. I guess mine is Butt and Bark. I don't mind that as long as that gets across. So far today I haven't heard any of the meats people or the production people really refute we need muscle and adequate fat cover in our steers, so I would have to say that I might be proud to be called the Butt and Bark man.

Now to get into these slides. What I've tried to do is to give a comparison between the Beef Empire Show and AK-SAR-BEN which I consider one of the major shows in the midwest.

If we compare the percentages of the different yield grades at the widely different shows, we see an interesting trend. In the early days of the Beef Empire Show, we had a majority of fat

cattle, mainly yield grade 3, some 4's and even some 5's. After the first show that started shifting back toward a trimmer, leaner steer. Basically this was nothing more than the educational process of showing the people what the judge wanted to see. So they shifted and as a result, a majority of the cattle today are yield grade 1's and 2's and some 3's. No yield grade 4's and 5's.

At the AK-SAR-BEN, basically, the same trend has been noticed. The cattle are somewhat larger, later maturing, definitely leaner and a higher percentage of yield grade 1's and 2's. If you compare the data in 1973, the feedlot steers were 30% yield grade 2's as compared to 28% at the AK-SAR-BEN. In 1977, the feedlot steers were 46% yield grade 2's as compared to 47% at the AK-SAR-BEN. Very comparable data between the two shows.

We have had a lot of discussion relative to the amount of fat necessary over the rib on some of our cattle. I personally think that between 0.3 - 0.4 inch of backfat in cattle is acceptable. We have been too super critical of 0.4 inch of fat on our show cattle. If we compare the Beef Empire Show and the AK-SAR-BEN, cattle that have less than 0.3 inch of fat on them have shown an almost steady increase. The cattle in the 0.3 to 0.45 inch category have remained fairly steady, and the fatter cattle (over 0.5" inch of fat) have decreased over time. But what has happened to quality grade? The first two years of the Beef Empire Show, which again is a feedlot show, 46% of the steers graded Prime, 51% Choice and 3% Good. You can go back and relate this to a high percentage of yield grade 4's and 5's at that particular time. We have got to hit a happy medium between the two.

However, during the last 10 years, the percentage of Prime graded cattle has become almost nonexistent. Very few cattle are being fed long enough to reach the Prime grade. Don Good did a super job of convincing the feeders to do away with the backfat and get a much higher or more desirable yield grade score.

At the AK-SAR-BEN show the last 10 years, the percentage of Choice graded steers have decreased from 69% to 23%, while the percentage of Standards have increased from 0% to 28%. The cattle have gotten larger, later maturing and so lean they simply will not grade with a minimum of fat cover.

At both shows, cattle with 0.3 to 0.45 inch of backfat have a 10-20% higher Choice percentage than cattle under 0.3 inch.

There has been a tremendous decrease at our major shows in English and Charolais crosses. Simmentals, Limousin, Chianinas and other exotic breeds have all increased. Basically what we are talking about is genetics vs. environment. Full feeding

should be a pretty good idea. Let those old calves run to a self-feeder and select a show to go to rather than select one steer and hope that he can make all eight shows. This is the biggest fault we have. Instead, we put the steer on limited feed until he gets his belly sucked up or if he doesn't get it that way, you can put the running boots on him and get him in good shape that way. Surely we can be more practical than that.

I do not believe that our major shows can provide as much information to the judge as should be provided at a local show. The local show should be the place that you could get all of the information (weight gain, days on feed, etc.). I don't think you can do it at a state show or any national show. The environments are simply different at every place and the data becomes less meaningful. However, at the county level, environment should be fairly equal, and some information (average daily gain, days on feed, etc.) could be beneficial. Sire, dam and breeder of the calf could also be given. This would be extremely important to local beef production. The people who are producing the end product need recognition too. Then you have a program being shown that commercial producers can relate to, and can only be beneficial to their programs and help them do a better job.

So as far as my ideas of the ideal steer are concerned, first, we can not set weight limits. If you set limits, exhibitors will try and meet those limits one way or the other. But, my ideal steer would probably weigh between 1200 and 1300 lbs. Under today's conditions, have 0.3 to 0.4 inch of fat at the 12th rib and grade low choice as long as the industry requires that. When times change, I think we can change with them and keep modern that way.

Gary Minish, Virginia Tech, Animal Science Department

This is my opportunity from the standpoint of a steer judge to express some of my opinions.

First, there is one comment that has been made several times this morning, i.e., that steer shows don't have anything to do with the industry. I totally disagree with that statement, from the standpoint of three things. First, right or wrong, steer shows do have a significant impact on type changes. Secondly, steer shows significantly impact the popularity of breeds. There is tremendous interest from several breeds represented here and that is good. Breeds have come and gone because of steer shows. Third, steer shows have a very large impact on fitting and grooming procedures in purebred shows. Most of these changes that come along that we try to do away with as far as fitting cattle started with our steer shows. So steer shows do impact the industry from a type, breed popularity and grooming standpoint.

In addition, steer shows do affect the cow calf man, feedlot operations and the packers. The present growth pattern, frame size, trimness, all physical traits and even the performance information that we have tried to select for visually in steer shows are transmitted by the top bulls in our breeds and each segment of the industry is affected.

Well anyway, I'm going to make some suggestion's on how we can make some changes in the steer shows. These are my opinions.

Current beef cattle breeding can claim the use of new breeds for crossing, artificial insemination, performance and progeny testing, and computerization among its many recent innovations. Breeding systems are improving significantly, and more objective measures of progress and predictability are being attained.

Breeding cattle shows have provided a note of optimism because performance and type are not necessarily mutually exclusive. They were at one time, but today there are a significant number of sires in all breeds that transmit superior performance as well as superior type.

The steer show represents none of the above and currently has been likened to that of a "dog show."

To change this image we need to establish selection standards for show steers. My 1982-85 selection standards are as follows:

1. Live weight, lb: 1200
2. Average daily gain, lb: 3.0
3. Feed conversion F/G, lb: 5.0
4. Backfat, in: 0.3
5. Ribeye area, sq in: 13.5
6. Yield grade: 2.5
7. Quality grade: low choice
8. Structure: sound

The first question is: Can we produce and market in large uniform numbers the above show steer without any attendant problems? Yes.

The second question is: How can we do it?

1. Employ judges who can accurately evaluate assess the above parameters.
2. Register all show steers with the breed association representing the steer's sire breed.
3. Show by age classification and provide birth date, actual weight, weight per day of age and backfat

information to the judge.

4. Make all national steer shows terminal.

The third question is: Why change? Because steer shows have a tremendous impact on beef type standards and more importantly this is our largest youth program in beef production. Let's make it realistic and objective.

The Show Manager's Perspective

Bob Volk, AK-SAR-BEN

It was a pleasure earlier this year to be in Oklahoma helping to set up this Symposium. We at AK-SAR-BEN have hosted Beef Seminars in 1970, 1972 and 1977 and found them to be beneficial to our Show. I know they were also beneficial to the United States. Bob Totusek, I would suggest you adjust the mailing budget for you will be receiving requests of these proceedings from every state in America.

Under the topic I am reporting on, "Show Manager's Perspective," I would first like to give you a little background of the AK-SAR-BEN Livestock Exposition and Rodeo. Our show is open to 4-H members only from Nebraska and the states touching plus Minnesota or a total of eight states with 2,500 exhibitors showing 5,300 head of livestock. All is made possible by the proceeds of thoroughbred horse racing. We can thank our forefathers who set up thoroughbred racing in 1935 on a non-profit basis for making it all possible. We are the only state in America whose proceeds from racing are used for agricultural, charitable and educational activities and one example is the AK-SAR-BEN Livestock Show, the world's largest 4-H show. There are many others which combine 4-H and FFA but AK-SAR-BEN is the only one that is exclusively 4-H and we are now in our 55th year.

Why are we here? Because of the youth of America and this symposium should reflect on your kids, and changes, if any are made, should be made only if they are good for the kids. If they are good for them it will be good for the show. That is the motive of our Executive Committee. These shows should be family affairs and emphasize the youth. I believe the best times of my life and the time my family was the closest knit was when Bob and Jeanette and sons Jay and Clark were showing steers and heifers in the 4-H shows of America.

We at AK-SAR-BEN pay our own premium money whereas other shows develop premium money from breed associations. I believe it is wrong to show by breed. We have not had breeds since 1978. I was convinced at the 1976 show where in one Angus steer class the first three purples, as placed by Harlan Ritchie, were the best three but all three steers had horns or scurs. Yet all three had blood typed to say they were Angus. That is ridic-

ulous. We have no more problems with breeds and it is a pleasure to look at our classes because they are all by weight. Last year one of the weight classes varied only 10# and some varied only 5# with an average of 40 head per class. We have a minimum weight limit of 900 pounds. No upper weight limit is enforced as we want the kid to come to our show and not to shrink the steer into a weight limit.

We require all market steers to gain 2# per day and market heifers 1.8# per day. They must have a weigh-in prior to April 1 for our late September show.

My Director of Agricultural Activities, Sherman Berg, and General Superintendent, Doyle Wolverton, have been to shows where they measure cattle and talked to judges who judged them. We are going to measure the feeder calves in September 1982 and show them by height. However, we plan to continue monitoring the height deal, remembering our cattle are sold by the pound.

(Rules for Grooming Slide) RULES FOR GROOMING

1. Clipping, trimming or blocking (all species) by anyone other than exhibitors will not be permitted at this show.
2. Grooming other than clipping, trimming or blocking may be done only by exhibitors and immediate members of an exhibitor's family.
3. Upon violation of above rules, exhibitor automatically is disqualified from show and forfeits all premium monies.
4. In the beef show the use of artificial tail fins or the addition of any hair or hairlike substance to the animal's body excluding false tails, will be permitted.
5. No change of the major color pattern of the animal by painting or dyeing of the animal will be allowed.
6. Any grooming material that allows color to come off from any animal will not be allowed at the show. Violators will be dropped one ribbon group in the live show and excluded from carcass competition when found. Animals will be shipped to cooperating packer if initial placing was blue or purple.

Now, let's take a look at some AK-SAR-BEN champions.

(Grand Champion Steer slides)
1978 - Troy Thomas, Harrold, South Dakota - 1,265#, 2.90 ADG,
Maine-Anjou-Shorthorn-Angus carcass: weight 864#,
loin eye area 15.7 sp. in., fat inches .2, kidney,
heart and pelvic 1.5 yield grade 1.56, cutability 53.07
and quality grade Choice-.

- 1979 - Sara Stille, Storm Lake, Iowa - 1,255# Simmental-Angus carcass: weight 837#, loin eye area 16.9 sq. in., fat inches .2, kidney, heart and pelvic 2.0 yield grade 1.17, cutability 53.96 and quality graded Good.
- 1980 - Steve Yackley, Onida, South Dakota - 1,240#, ADG 2.88, Chainina-Angus sired by Motivator carcass: weight 818#, loin eye area 15.7 sq. in., fat inches .25, kidney, heart and pelvic 2.0, yield grade 1.734, cutability 53.10 and quality grade Choice-.
- 1981 - Stacey Gropper, Grinnell, Iowa - 1,265# Chianina-Angus, ADG 2.38, carcass: weight 831#, loin eye area 14.4 sq. in., fat inches .3, kidney, heart and pelvic 2.0, yield grade 2.19, cutability 52.02 and quality grade Good-.
(Champion Heifer Slide)
- 1980 - Steve Yackley, Onida, South Dakota - 1,145#, ADG 2.29, Angus Cross carcass: weight 738#, loin eye area 12.0 sq.in., fat inches .3, kidney, heart and pelvic 2.0, yield grade 2.61, cutability 51.07 and quality grade Good+.

I would suggest if you want to add a class to your show, add a market heifer class. We have traditionally had about 40% of the market beef that have gone to slaughter have been heifers. That should make the ladies happy as it did my former secretary. About 10% of 1000 head entered are heifers and are divided into three classes by weight.

At the 1970 AK-SAR-BEN Beef Seminar we established guidelines for our shows when we moved from a 70 purple ribbon carcass competition to a terminal show where all market beef are slaughtered. In addition, as a result of the 1981 show, in which the quality grade continued to decline, I asked the University of Nebraska, that's "Go Big Red" territory, Animal Science Department to take a look at the last ten years of carcass competition. This is what it looked like:

(Ten Year AK-SAR-BEN Beef Summary slide)

NO. YEAR	CARCASS		YIELD				CHOICE
	HEAD	WT.	LEA	FAT	KPH	% GRADE	
1981	681	765.8	14.76	.28	2.05	1.789	23.9
1980	757	770.02	14.30	.29	1.8	1.8	29.8
1979	674	756.7	14.35	.32	2.1	1.9	28.8
1978	655	756.7	14.4	.32	2.1	1.9	45.0
1977	916	745.3	14.1	.34	2.2	2.2	27.0
1976	1021	754.64	13.96	.38	2.7	2.4	51.3
1975	919	707.80	13.57	.37	2.8	2.3	37.9
1974	874	694	13.01	.40	3.0	2.6	38.3
1973	981	672.99	12.87	.42	2.9	2.9	49.1
1972	977	669	12.47	.51	3.1	2.8	69

In order of importance you can see we have lost in percentage of choice grade cattle down from 69% to 23%, carcass weight

is up 100#, loin eye area is up 2 square inches, the fat cover is cut almost in half .51 to .28, kidney heart pelvic fat is down and yield grade is down from 2.8 to 1.7. The cattle have gotten so lean they don't grade. The percentage of Choice in 1976 was up because we let the red and white withdraw from the sale.

(Dark Cutter - All Cattle slide)
 (Dark Cutter - Packing Plant slide)
 (Carcass Yield by Grade slide)
 (Carcass Grade by Yield slide)

STATE PERCENTAGES																	1981 All Cattle	
TE	UT	BLK	UT	ST-	ST	ST+	GD-	GD	GD+	CH-	CH	CH+	PR-	PR	PR+	D.CUT		
IA	0	3	0	15	0	20	45	0	55	53	5	4	0	0	0	36	22	
	0.0	1.32	0.0	6.58	0.0	12.26	28.51	0.0	24.12	23.25	2.19	1.75	0.0	0.0	0.0	15.79		
NE	0	5	0	19	2	54	88	0	90	62	6	2	0	0	0	45	34	
	0.0	1.45	0.0	5.51	0.58	16.23	25.51	0.0	28.41	20.00	1.74	0.58	0.0	0.0	0.0	13.04		
MN	0	1	0	4	2	16	22	0	22	15	2	1	0	0	0	8	6	
	0.0	1.13	0.0	4.71	2.35	18.82	25.88	0.0	25.88	17.65	2.35	1.18	0.0	0.0	0.0	9.41		
	0	0	0	1	1	4	7	0	4	4	0	0	0	0	0	3	5	
	0.0	0.0	0.0	4.35	4.35	17.39	30.43	0.0	26.09	17.39	0.0	0.0	0.0	0.0	0.0	13.04		

PLANT PERCENTAGES																	1981 All Cattle	
NT	UT	BLK	UT	ST-	ST	ST+	GD-	GD	GD+	CH-	CH	CH+	PR-	PR	PR+	D.CUT		
1	0	5	0	16	4	63	120	0	130	105	13	7	0	0	0	30	44	
	0.0	1.08	0.0	3.46	0.86	13.61	25.92	0.0	28.08	22.68	2.81	1.51	0.0	0.0	0.0	6.48		
2	0	4	0	23	1	41	62	0	51	34	0	0	0	0	0	62	21	
	0.0	1.83	0.0	10.55	0.46	18.81	28.44	0.0	23.39	16.51	0.0	0.0	0.0	0.0	0.0	28.44		

CARCASS WEIGHT YIELD BEEF

Weight Yield All Cattle (681) -----	63.32
Weight Yield 71 Purple Cattle -----	64.67
Weight Yield Blue Cattle -----	63.56
Weight Yield Red Cattle -----	62.72
Weight Yield of 14 Champions -----	65.12

CARCASS YIELD BY GRADE

	% Choice	% Good	% Standard	% Bullock
64% or Less	23.7	55.7	19.4	.2
65 - 66%	23.8	59	15.6	.2
67% or More	40.5	43.2	13.5	.3

CARCASS GRADE BY YIELD

	64% or Less	65 - 66%	67% or More
Choice	71.6	18.7	9.67
Good	74.8	20.6	4.6
Standard	79.1	16.5	4.3
Bullock	66.7	22.2	11.1

Now the good thing that comes from all this data is that it is not all negative. Look at this slide that shows over-fat cattle do not exist in our show or in any show in America today.

(1981 Yield Grade slide)

1981 AK-SAR-BEN YIELD GRADE

YIELD GRADE 1 and 2	655
YIELD GRADE 3	24
YIELD GRADE 4	2
YIELD GRADE 5	0
TOTAL HEAD	681

50-60% of beef sold in America is not graded by the U.S.D.A. and, take the Safeway chain, say 1700 stores, that sell beef that does not have a quality grade. I ask, is our show ring wrong? I think our cattle are somewhat ahead of the time but we still sell them by U.S.D.A. grades. The only way you can sell is on the rail.

(1981 Beef Price slide)

1981 AK-SAR-BEN BEEF PRICE
STEERS

QUALITY GRADE	CARCASS WEIGHT	YIELD GRADE				
		1	2	3	4	5
USDA CHOICE & PRIME	899 down	111.00	109.50	108.00	96.00	93.00
USDA GOOD STANDARD	899 down	All weights regardless of yield grade			103.50	
		HEIFERS				
USDA CHOICE & PRIME	over 500	105.50	104.00	102.50	93.50	90.50
USDA GOOD STANDARD	over 500	All weights regardless of yield grade			96.00	

1. Base price of Choice yield grade 3's is \$1.00 per 100# dressed over the quote of direct cattle trade Omaha USDA quoted Friday noon.
2. Spread for Choice to Good grade and 3 to 4 yield grade will be determined from Monday yellow sheet close. 5's are #3.00 off 4 price.
3. 900#-1000# carcass steers are minus \$1.00; 1000# - 1000# carcass steers minus \$2.00 of 5-9 price.

4. Bullocks \$1.00 below base price for goods.
5. Dark cutters will be discounted #2.00 off his price group.
6. Bruises will be discounted .50 per side bruised per hundredweight of carcass.

Some other good things we do include an AK-SAR-BEN Catch-A-Calf class started in 1978 by purchasing cattle we knew were at least 1/2 English bred. These calves were purchased by AK-SAR-BEN and given to kids who were successful in catching a rodeo calf during the Rodeo performance. These cattle over the last 4 years have averaged over 50% Choice because we know the background and we suggest to the kids that they take them to no more than one other show before ours. The program also emphasizes average daily gain. These cattle come from the Wagonhammer and Adamson ranches and, as I mentioned, are at least 1/2 English bred meaning, in this case, Angus.

AK-SAR-BEN also has a class called Performance Market Steer. These steers have a certified birth date and known sire and dam and are fast-gaining, big cattle. They have weight per day of age ranging from 2.3 to 2.9. Carcass weight ranged from 1,115# to 1,580# last year. These are cattle that grow tremendously fast. In this class last year there were 29 head of which 10 graded Choice, 13 graded Good+, 4 Good and 2 Standard. They are big, beefy cattle that are also important to the cattle business. The carcass awards in this class are based on weight per day of age and merit given equal emphasis to each.

I think I have taken more than my allotment of time but want to say the guidelines still are the same as 1970 and should be choice for quality and yield grade 2 or better.

The greatest thing we have in common in beef steer show business is the phrase, "Grand Champion." It is better than being in the Top Ten or No. 1 in football. Oh, the Boy Scouts and Girl Scouts would love to say Grand Champion. Yes, I hesitate to say this but even the church would like to use the words, Grand Champion. Because these words, Grand Champion, make kids want to win and succeed and to be a Champion. Let's hope we in this room are Champions today and tomorrow in making things better for beef shows.

I trust I have given you enough information to invite questions from the Reaction Panel.

Ken Hartman, National Western

I would like to thank you for asking me to be here today. This is a great honor for me to be on the Show Manager's Panel.

As somebody said earlier and I think everyone on this panel and every show manager out there is deeply concerned with steer shows. Steer shows are still a very important part of the livestock show business. They cannot only be educational to the

youth directly involved with the project, but also beneficial to the producer, the feeder and the packer. The show presents building blocks that arise for the young men and women as they learn to win and lose. They learn to make decisions, hopefully select genetic superior steers, keep records, learn financial responsibility and most of the time make new friends. Many individuals continue on in agriculture because they became enthused by getting involved with a 4-H or FFA project. Certainly we have to be enthused and love the business in order to stay in agriculture today. Needless to say the monetary means have really not been there in the most recent years but we won't get into that. These are only a few of the good points that we really feel steer shows offer to you and we want to try and keep this available. This has been stressed earlier.

Let me touch on a few of the problems that steer shows can cause at least from the management side, looking at it from trying to maintain an image. Its my feeling, and this has been touched on a number of times, that our number one problem that we face today is integrity or credibility. Without integrity in this business, the steer shows will fail. I challenge you that the youth involved, at least at this young age, are not at fault. Integrity has to begin with the parents, the 4-H leaders, the FFA advisors and the environment that they are surrounded with. Integrity not only has to be in the youth but also in the breeders, the producers of these feeder calves which these kids are taking and bringing back to the shows. Because of this lack of integrity as you are probably well aware of it seems like more and more rules have been implemented and created to control the honesty of the show.

I hate rules. I wish we didn't have to have any rules in the world but rules are made to try to improve the situation and not try to hurt it. Now I know and everybody says when you make a rule, before you get the rule typed and printed someone has already figured out how to beat it, or how to get around it. But rules are made to try and improve the show and hopefully we don't have to put any more rules in than are necessary. There has been a number of discussions here this morning about frame size, scale & weight. Let me tell you folks, we at Denver are not afraid to try something. We are going to show our steers by height this year. Everybody says they are going to stop by and take a look at us. One of the big problems we've seen over the last few years has been repeated here many times today and that is the fact that they are shrinking these steers from 14-15-1600 pounds back to 1250 pounds because the judge said that he wants a 1250 pound steer for his champion steer and they will bring them to you. We hope that by showing and classing these steers by height that it will eliminate the encouragement for the exhibitors to shrink the steers back to a particular weight. The hope is with the animals all being of the same height that the thickest, meatest animal in that particular class would win. It should also make it easier for the judge to select for carcass ability and not select just for the tallest. As Bob Long said

earlier, it doesn't take any real smart individual to walk out and select the tallest steer in the class. We have noticed a trend that we thought was happening. The judges were picking the tallest steer in the class down to the smallest steer. We did take measurements, I've got them with me. I can quote you a few figures off of that but this certainly was the case. In most all classes, that the top placing steers were your tallest steers going down to your shortest steer being your last placing in the class. It was very easy for you to say I could sure follow that judge. I know exactly what he is doing. Well we are going to take that away and make the judge get down and really look for carcass ability and factors that are more meaningful to the industry.

The other thing that we hope measurements will do is to furnish fresher cattle to the judge. When we say fresh at least we hope that they have not been depleted of 300 pounds of moisture. We are one, like many other shows, that are having a hard time selling the product. This year we have two packers in our area. There have been others at times. But Chuck and myself, before this show, were making arrangements to kill all of our steers and the packers said, "Don't even come talk to us. We don't want to hear about your problem. We have had your cattle before and we don't want them." Thank goodness we have some good friends and our friend Monfort come through that day. We had to ship our cattle from Denver to Grand Island to kill. The only ones that we didn't were the steers we sold in the premium sale. Those that were sold in the premium sale were taken home by the buyer and put in their locker. However, the buyer would call up and say, "Where in the world did this beef come from? I can't eat it." Therefore, we started this year, instead of letting the buyer take the poor quality meat home, we got box beef. We supplied them with really choice steaks. At least we got our buyers back. And let me tell you when we start going out and promoting this premium sale. We are asking people to come support the youth. Then they get a poor product, we lose the premium sale and we have lost a big part of the steer show. So we have to do something about getting a better quality product to the packer and the consumer. The one other thing that I might tell you since Bob Volk has already plugged AK-SAR-BEN so much, the National Western in the fall of 1983 will be going with a Fall Junior Classic Show. This will be for steers, barrows, lambs, breeding heifers and of course the Juniors will be involved with horses in this also. One of the reasons that we are doing this is to try to promote what the beef industry, the hog and the sheep industry should be and that is getting the animals to market at the right time. We have probably been encouraging some of the youth to hold these steers from the time that they are really ready, over to January and of course, we also need more facilities and this is again a better utilization of our facility. But one of the main considerations that our committee made in adopting this proposal is that we are going to more desirably fit the time that all of these classes of livestock ought to be marketed. So in 1983 we will be going to a

Junior Fall Classic and marketing these steers hopefully at a much better time.

In summary I would like to say that the show recognizes the steer show and the impact that they should have on the industry. We also recognize the problems that can rise from such an event and our doing utmost to make them a meaningful event for all segments of the industry. Thank you!

NATIONAL WESTERN STOCK SHOW

JUNIOR SHOW STEERS

1982

BREED HEREFORD

CLASS HEAVY WEIGHT (1180 - 1439)

ENTRY NUMBER	PLACING	WEIGHT	HIP HEIGHT
53	1st	1216	52 $\frac{1}{2}$
57	2nd	1329	53 $\frac{1}{2}$
44	3rd	1439	53 $\frac{3}{4}$
56	4th	1250	50 $\frac{1}{2}$
63	5th	1180	51
64	6th	1184	51

CLASS LIGHT WEIGHT (978 - 1173)

42	1st	1146	52 $\frac{1}{2}$
58	2nd	1124	51 $\frac{3}{4}$
55	3rd	1173	51
43	4th	1168	51
62	5th	1128	51
59	6th	1172	50
46	7th	978	48

NATIONAL WESTERN STOCK SHOW

JUNIOR SHOW STEERS

1982

BREED POLLED HEREFORDCLASS HEAVY WEIGHT (1119 - 1252)

ENTRY NUMBER	PLACING	WEIGHT	HIP HEIGHT
7	1st	1199	51 $\frac{1}{2}$
68	2nd	1251	52 $\frac{3}{4}$
8	3rd	1121	50
10	4th	1165	49 $\frac{1}{2}$
9	5th	1119	48 $\frac{3}{4}$
13	6th	1252	50 $\frac{1}{2}$
36	7th	1127	51
22	8th	1129	48 $\frac{3}{4}$
32	9th	1172	51
28	10th	1158	48 $\frac{1}{2}$
3	11th	1189	48 $\frac{3}{4}$

CLASS LIGHT WEIGHT (958 - 1117)

69	1st	1084	48 $\frac{1}{2}$
18	2nd	1029	49
17	3rd	1021	48 $\frac{3}{4}$
33	4th	1001	49 $\frac{1}{2}$
19	5th	1036	48
67	6th	958	47 $\frac{1}{2}$
31	7th	981	49
21	8th	1062	50
6	9th	999	49 $\frac{1}{2}$
15	10th	1117	48 $\frac{3}{4}$
30	11th	970	49

NATIONAL WESTERN STOCK SHOW

JUNIOR SHOW STEERS

1982

BREED SHORTHORN

CLASS HEAVY WEIGHT (1238 - 1342)

ENTRY NUMBER	PALCING	WEIGHT	HIP HEIGHT
76	1st	1247	52 3/4
79	2nd	1253	54
77	3rd	1315	55 1/2
73	4th	1245	52 1/2
71	5th	1238	51
81	6th	1243	54
80	7th	1342	53 1/2

CLASS LIGHT WEIGHT (997 - 1228)

89	1st	1216	53 1/2
86	2nd	1160	51 1/2
88	3rd	1228	55 1/2
87	4th	1130	51 3/4
90	5th	997	52 3/4
78	6th	1215	52
82	7th	1220	53

NATIONAL WESTERN STOCK SHOW

JUNIOR SHOW STEERS

1982

BREED LIMOUSINCLASS HEAVY WEIGHT (1222 - 1327)

ENTRY NUMBER	PLACING	WEIGHT	HIP HEIGHT
241	1st	1223	54 $\frac{1}{2}$
151	2nd	1327	56 $\frac{3}{4}$
162	3rd	1323	55
142	4th	1254	54 $\frac{1}{2}$
271	5th	1232	55 $\frac{1}{2}$
155	6th	1312	55
145	7th	1276	53 $\frac{3}{4}$
143	8th	1299	54
136	9th	1222	54
364	10th	1224	53
144	11th	1293	53 $\frac{1}{2}$

CLASS LIGHT WEIGHT (1066 - 1203)

140	1st	1154	54
141	2nd	1203	53 $\frac{1}{2}$
137	3rd	1198	54 $\frac{1}{2}$
135	4th	1203	54 $\frac{1}{2}$
204	5th	1125	53 $\frac{3}{4}$
158	6th	1126	54
153	7th	1188	54 $\frac{3}{4}$
139	8th	1186	54
146	9th	1180	52 $\frac{1}{2}$
161	10th	1066	51 $\frac{1}{2}$
138	11th	1174	53 $\frac{1}{2}$

NATIONAL WESTERN STOCK SHOW

JUNIOR SHOW STEERS

1982

BREED SIMMENTALCLASS HEAVY WEIGHT (1285 - 1526)

ENTRY NUMBER	PLACING	WEIGHT	HIP HEIGHT
114	1st	1366	57 $\frac{1}{2}$
106	2nd	1321	57 $\frac{1}{2}$
94	3rd	1317	57
96	4th	1298	54
107	5th	1365	56 $\frac{1}{2}$
130	6th	1309	54
117	7th	1315	59
92	8th	1361	57 $\frac{3}{4}$
121	9th	1289	56 $\frac{3}{4}$
104	10th	1319	None
120	11th	1323	57 $\frac{3}{4}$
102	12th	1484	54 $\frac{1}{2}$
288	13th	1285	56 $\frac{1}{2}$
115	14th	1526	57
129	15th	1343	None
97	16th	1328	54 $\frac{1}{2}$
110	17th	1291	53 $\frac{1}{2}$

CLASS LIGHT WEIGHT (1040 - 1265)

118	1st	1250	54 $\frac{1}{2}$
108	2nd	1126	53 $\frac{1}{2}$
111	3rd	1201	54 $\frac{1}{2}$
95	4th	1221	56
359	5th	1219	54 $\frac{1}{2}$
126	6th	1040	54
101	7th	1256	54 $\frac{1}{2}$
109	8th	1245	51 $\frac{1}{2}$
99	9th	1168	52 $\frac{1}{2}$
122	10th	1260	53 $\frac{1}{2}$
116	11th	1227	50 $\frac{1}{2}$
100	12th	1148	53 $\frac{1}{2}$
93	13th	1174	48 $\frac{3}{4}$

NATIONAL WESTERN STOCK SHOW

JUNIOR SHOW STEERS

1982

BREED OTHER BREEDS & CROSSESCLASS HEAVY WEIGHT (1318 - 1508)

ENTRY NUMBER	PLACING	WEIGHT	HIP HEIGHT
287	1st	1330	57 $\frac{1}{2}$
353	2nd	1375	56 $\frac{1}{2}$
225	3rd	1414	57 $\frac{3}{4}$
282	4th	1413	56 $\frac{1}{2}$
243	5th	1405	58
366	6th	1326	57 $\frac{1}{2}$
170	7th	1318	56 $\frac{1}{2}$
345	8th	1320	54 $\frac{3}{4}$
269	9th	1393	54 $\frac{1}{2}$
351	10th	1320	56
173	11th	1508	56 $\frac{3}{4}$
291	12th	1435	56
347	13th	1332	54
344	14th	1377	55 $\frac{3}{4}$
290	15th	1489	56 $\frac{1}{2}$
363	16th	1340	56 $\frac{1}{2}$
192	17th	1347	54 $\frac{1}{2}$
342	18th	1340	55

CLASS HEAVY WEIGHT (1283 - 1317)

305	1st	1315	56 $\frac{1}{2}$
184	2nd	1292	55 $\frac{1}{2}$
270	3rd	1310	54 $\frac{3}{4}$
356	4th	1299	57
319	5th	1283	55 $\frac{1}{2}$
244	6th	1286	55
249	7th	1291	55
167	8th	1306	57 $\frac{1}{2}$
181	9th	1284	55
180	10th	1301	58
199	11th	1293	55 $\frac{1}{2}$
223	12th	1298	54 $\frac{3}{4}$

BREED OTHER BREEDS & CROSSESCLASS HEAVY WEIGHT (1318-1508) Continued

<u>ENTRY NUMBER</u>	<u>PLACING</u>	<u>WEIGHT</u>	<u>HIP HEIGHT</u>
285	13th	1316	54 $\frac{1}{2}$
203	14th	1304	56 $\frac{1}{2}$
354	15th	1317	55 $\frac{1}{2}$
326	16th	1300	56
283	17th	1283	55 $\frac{1}{2}$
193	18th	1287	52 $\frac{1}{2}$

CLASS MEDIUM WEIGHT (1242 - 1279)

301	1st	1279	56 $\frac{1}{2}$
323	2nd	1271	55 $\frac{1}{2}$
335	3rd	1242	55 $\frac{1}{2}$
343	4th	1263	55 $\frac{1}{2}$
242	5th	1278	56
297	6th	1266	55 $\frac{1}{2}$
254	7th	1275	56
341	8th	1249	54 $\frac{1}{2}$
171	9th	1267	56 $\frac{1}{2}$
299	10th	1255	54 $\frac{1}{2}$
334	11th	1276	56 $\frac{1}{2}$
261	12th	1248	55 $\frac{1}{2}$
309	13th	1264	52 $\frac{3}{4}$
202	14th	1266	56
274	15th	1245	54 $\frac{1}{2}$
185	16th	1274	56 $\frac{1}{2}$
329	17th	1242	None
333	18th	1264	55 $\frac{1}{2}$
205	19th	1268	57 $\frac{3}{4}$

CLASS MEDIUM WEIGHT (1222 - 1241)

339	1st	1228	56 $\frac{1}{2}$
265	2nd	1238	53 $\frac{3}{4}$
182	3rd	1232	55 $\frac{1}{2}$
316	4th	1235	56
228	5th	1235	56 $\frac{3}{4}$
340	6th	1237	56

BREED OTHER BREEDS & CROSSESCLASS MEDIUM WEIGHT (1222-1241) Continued

ENTRY NUMBER	PLACING	WEIGHT	HIP HEIGHT
310	7th	1222	54 3/4
183	8th	1233	55
281	9th	1241	53 3/4
338	10th	1236	55
295	11th	1224	54 3/4
259	12th	1239	53 3/4
210	13th	1233	52 1/2
255	14th	1239	57 1/2
166	15th	1237	56 1/2
350	16th	1225	53 1/2
317	17th	1222	52 1/2
307	18th	1228	53 1/2

CLASS LIGHT WEIGHT (1184-1218)

209	1st	1201	55 1/2
227	2nd	1214	55 1/2
256	3rd	1204	55 1/2
221	4th	1187	54 1/2
331	5th	1218	54 1/2
246	6th	1193	55 1/2
306	7th	1210	55 1/2
264	8th	1209	54 1/2
215	9th	1188	55 1/2
328	10th	1197	54 1/2
177	11th	1206	52 1/2
318	12th	1204	53 1/2
201	13th	1217	53
266	14th	1184	52 1/2
272	15th	1201	53 1/2
280	16th	1192	52 1/2
179	17th	1212	52
289	18th	1196	56 1/2

CLASS LIGHT WEIGHT (1096-1180)

337	1st	1109	54 1/2
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BREED OTHER BREEDS & CROSSES

CLASS LIGHT WEIGHT (1096-1180) Continued

<u>ENTRY NUMBER</u>	<u>PLACING</u>	<u>WEIGHT</u>	<u>HIP HEIGHT</u>
168	2nd	1158	52 $\frac{1}{2}$
278	3rd	1121	54 $\frac{1}{2}$
194	4th	1160	53 $\frac{1}{2}$
279	5th	1137	52 $\frac{3}{4}$
206	6th	1150	54 $\frac{3}{4}$
222	7th	1176	53 $\frac{1}{2}$
176	8th	1180	54 $\frac{1}{2}$
352	9th	1167	54
330	10th	1131	54 $\frac{3}{4}$
348	11th	1152	53 $\frac{3}{4}$
237	12th	1174	53 $\frac{3}{4}$
349	13th	1134	54
214	14th	1152	52 $\frac{3}{4}$
298	15th	1145	56
273	16th	1096	52 $\frac{1}{2}$
362	17th	1180	54 $\frac{3}{4}$
236	18th	1139	51 $\frac{1}{2}$
260	19th	1179	54 $\frac{3}{4}$

Don Jobes, Jr., Houston Livestock Show and Rodeo

When first approached by Bob Kropp to attend and be a part of the National Steer Symposium, I was reluctant to commit myself; however, after much soul searching and deep thought, I decided this symposium could be most valuable to the industry as a whole.

Traditionally, steer shows have been the real glamorous publicized art of the major livestock shows. This fact alone should serve to make this symposium a highlight of this year's activities and plans for future livestock shows. I want to take this opportunity to congratulate and commend those of you here in Oklahoma for the concept and the foresight and energy to develop the program.

As most of you know, the junior steer sales and shows in Houston, have been worthy of national publicity and attention. I say "sales and shows" because it is obvious that the sales being of great magnitude are what have created our magnificent steer show. We have developed in Houston a tremendous rapport with the consuming public through our very special and elite Steer Auction Sales Committee.

The 1982 Houston Livestock Show and Rodeo put over 600 steers into lockers and deep freezers for consumption purposes. The Grand Champion Steer sold for \$127,000.00. We had 14 breeds of steers in our show and sold 414 steers in our premium sale. As with all shows, we have our problems with the steer show. We limit entries to one steer per exhibitor. Our Junior Steer Show, by the way, is limited to Texas youth only. Entries in 1982 in our Junior Steer Show for the 14 breeds was 2,061, 1,345 arrived, 223 were sifted and 414 were placed. We have no way of knowing if individuals have entered more than one steer in our show under two or three different names, even though we do have a good state certification program. We have traditionally had problems with age determination of steers. This is something that has not been addressed much today, but is very important as far as type, class, size and scale is concerned. We have had tremendous problems, in fact one of our problems in 1981 was a rumor that the Champion Hereford Steer had his temporary central incisors wired into his jaw. So Mr. Mike McCray, our Assistant Livestock Manager went to the packing house, got the head, boned it out and of course, nothing was wrong.

The use of drugs and/or Lasix, artificial coloring and all types of things that alter the conformation or appearance of a steer should be stopped. We haven't done this yet in our steer shows, but year before last, in cooperation with Texas A&M and

their Vet School, we pulled blood from lambs in our junior show. Of course, it came back that blood samples were not the way to discover the use of Lasix in an animal. We found that out pretty quick. Recently we have taken urine samples from the top placing pigs and one of the samples came back from Texas A&M conclusively that one of the pigs, the 1st place lightweight cross-bred barrow, had a very high incidence of Lasix in the urine. We have barred that particular exhibitor and his family from showing in Houston again, so we do believe in what you are saying. We think that we have got to stop the illegal use of drugs and it is a great possibility that we may collect urine samples from steers in 1983.

We, at Houston, have continued to classify our steers by breed and weight within breed even though many other shows have combined breeds or cross breeds into one classification and established classes by weight breaks only. And, of course, now there is a possibility that the trend will be towards class breaks by measurement rather than weight. As mentioned earlier, we in Houston have continued to show our steers by breed. It is our feeling that with the steer shows being so visible, breed identity is probably better established in the minds of the general public through the steer shows than through the purebred breeding cattle competition. We also all know that we must have pure breeds in order to produce cross breeds and that the pure breeds must be efficient meat producers in order to produce cross breeds of desirable quality. This brings me to one of the greater problems that we in Houston are now facing and that is the problem of classifying steers by breed. This problem is so great that our State County Agents and Vocational Teachers Show Committee addressed it in their comments to the show managements at our annual Spring meeting. Consistent classification of steers is one of our major problems and classifiers with children showing steers of the breed they are to classify should not be allowed to work. Only junior exhibitors should be allowed to walk steers through classification and classification should be on breed character only and not be based on breed data as to sire and dam on the entry card.

Prior to the advent of the exotic breeds and infusion of their blood into the traditional European breeds of cattle, we did not have problems with classification. The reason being that the national breed associations sponsored steer shows through premium support and very freely sent staff personnel to the shows to assist in steer classification. At present, some of these associations have changed their outlook, erroneously in my opinion, and will not support the steer shows from their national office and will not provide staff personnel to assist in

classifying. As a result, state association and regional associations have begun sponsoring the steer shows and are send breeders to the shows as classifiers. As most of you know, it is difficult to use a purebred cattle breeder as a judge or in our case to classify. Their personal interest in blood lines within breeds and likes and dislikes as to breed characteristics and in our case possible personal involvement where so much money is concerned, affects their decision. Last year in Houston we had 2 breeders, I think, come down and I am not going to mention the breed but it was a smaller steer breed in our show, not too many in numbers. They classified out all the good steers and left their own kids with steers in the show. That is why the county agents and Ag teachers said don't use that type of person. I'm serious, this happened. Of course, we almost had a protest but our rule is that we will not accept protests on classified steers so that nobody could really protest the thing. And you know that came as a pretty big shock. Two years ago we had another breed that come to Houston. The steers for the most part had shown in San Antonio the week before and because of our sale and we know this because of the big money in Houston the Breed Champion steer, the Reserve Champion steer, the 1st heavy weight steer, the 2nd heavy weight steer, the 1st light weight steer and maybe the 2nd light weight steer in this particular breed did not sell in San Antonio. They came on to Houston. The same classifiers that classified in San Antonio classified the steers and kicked them out at Houston. So as you can see it is difficult to use a purebred cattle breeder as a judge or in our case as a classifier. We don't really like that system and we are hoping that somehow out of this information that we could get a point across to some breed associations that it is important that we have somebody at the steer shows if we are going to have breed classes and we may be wrong, we may should be showing steers by height rather than breed but we feel like that breeds are important. As you can see these classifiers have their personal interest in bloodlines within breeds, likes and dislikes in breed characteristics and in our case possible personal involvement where so much money is concerned.

The problem now is if we want to continue with steer shows by breeds is, how do we classify or divide steers into breeds in a manner that is fair and equitable to all? My suggestion might be that the purebred associations who have dropped support of the steer shows review their position and reconsider the fact that the steer shows may be the best means of breed promotion and education to the public as a whole at their disposal. I have always felt that the breed associations should continue to be involved in livestock shows, well I don't think we could exist without them and I feel that the Houston show has attempted in many, many ways to cooperate in making the breed shows more appealing to the public. I also feel that the steer show, as has been brought out this morning,

has a direct effect on purebred cattle selection and breeding programs. I think that's been evidenced by what has happened with the advent of the new breeds.

The other solution that comes to my mind for the classification problems we are faced with today is for the classifiers to be more lenient in their breed character criticisms. I feel sure the breed associations are interested in maintaining breed classification in the major shows. This is evidenced, not only by the continued support of most of the associations with premium money, but also by the fact that there are special awards given by eleven different breed associations to the Champion Steer in Houston should he be recognized as one of their breed. For example, the Grand Champion Steer in Houston in 1982, after selling for \$127,000.00, received a \$1,000.00 award from the American Maine Anjou Association and following the Show, the exhibitor received \$2,500.00 from the American Black Maine Anjou Association. In addition to this, the American Black Maine Anjou Association has run full color ads with the picture of this steer in promoting their breed. One of which is in this month's "Cattleman Magazine", full page. We all know that this steer probably carried almost as much Angus breeding as he did Maine Anjou. We also know that he could have carried some Chainina breeding. The point I am trying to make is that a black steer could very well represent the Angus breed even though an animal husbandman could detect strong signs of other breeding.

In closing, I think it only right to point out that I would hate for us, as professional entities in the livestock industry and as educators, to lose sight of the fact that the junior steer shows are for the young people and that our place is in the development of programs that will teach fair play in business and competition as well as the many technical aspects of livestock production through feeding; and the shows through their sales contribute to the development of future livestock producers and leaders in agriculture.

The Reaction Panel

1. Club-calf Industry - Jerry Adamson, Cody, Nebraska

I will be the first to admit that I don't have a y slides or prepared material for this. I didn't feel it was appropriate since we were on a reaction panel. I just sort of scraped the crap off of my boots and came on down to Stillwater and listened in on all of the presentations this morning and I thoroughly enjoyed it and it was a very educational experience. It seems to me that so far at this symposium the underlying theme as this day progresses has been to back up both in weight and frame score. From a commercial man's standpoint and that's where it

all begins, gentlemen, if the commercial man doesn't make money then, I think we all would agree that we probably won't have any cattle to feed or steers to show and if we are talking about backing up in weight and frame score, I think we are making a very serious mistake. I think that maybe a lot of us have missed the point. We maybe taking for granted the steers we see in the shows. Admittedly some of these cattle are approaching being too big but I think we are kind of taking for granted that all the commercial cow herds of this country have all been doing some constructive genetic improvement in their programs for the last 10 years and this is simply not true. I venture to say that 70 to 80% of the commercial producers in this country haven't changed a thing. They have just now begun to find the bigger framed breeding animals within their own breed. Some of them are crossbreeding, of course, and some of them are thinking about it. I think it would be real serious to leave them with the feeling that we are going to back this whole thing up. Bearing in mind that 80% of the commercial cows are still weaning a 350-400# calf and all producers (a large percent of them aren't making a dime, in fact their fixed costs are going up every day and they sell their cattle by the pound) have got to sell is their grass and the best way that they can merchandise their grass is through cattle. If we start backing this thing up I think the commercial producers of this country are going to become a lot smaller in numbers. We have got to wean bigger calves and we need to have bigger females to have the bigger calves. In turn, these steers are going to grow, gain and do all the things we talked about this morning. I really hate to criticize the cattle of tomorrow for having the ability to grow. I think this is an excellent opportunity. Everyone has a few little things that they have in the back of their minds and I guess I'm going to take this opportunity to bring some of these things out. Relating back with the shows for just an instant, I would like to direct this at the show officials, not only the ones that are here but all show officials. I believe that within our industry we have people from all segments of the industry that are qualified to judge these major shows, both from the standpoint of experience and knowledge. Just because someone is a packer or a producer, that shouldn't exclude him from having an opportunity to judge the major steer shows of this nation. I guess I'm really supposed to be talking more about club calves than just the feeder aspect but I don't think we can separate the two. I think if you have got a program and are raising the right kind of feeder cattle, the club calves will sort of take care of themselves. Anybody that's geared up to raise fast growing, high yielding cattle will have a few club calves. If you adjust your program strictly for club calves, you probably are making a serious mistake because you're going to have to merchandise the females, the lower end of these steers and the club calf thing will take care of itself if you have a good program. I feel that the steer we have set up as our ideal for the past few years can be reproduced. I'm not say that we can't improve

on him but I'm saying that the steers that have been put up the past few years really are pretty economical for all segments of the industry. I think that the producer can make money with them, the feeder can make money with them and I know the packers can make money with them. So I hate to see us change something just for the sake of changing. I think this has been done in the past by certain groups deciding, "Hey, we've run on this track long enough, we better do something else." I hate to see that because you can't change your breeding programs fast enough to keep up with the trend. So if there are some changes that need to be made, let's make them. But let's not make changes just for the sake of changing. I have a few figures I will run by real fast. We keep all of our heifers, sell all of our steers as calves and we breed a lot of the heifers so that the yearling heifers that we sell the following year are the low end of our heifer calf production. In February, last year's yearling heifers were killed in Nebraska. They were fed in Nebraska and I got the kill sheet back on these cattle dated February 8. There were 119 of these heifers, mostly 2 and 3 way cross heifers with an Angus base. One hundred fifteen were yield grade 1's and 2's, four were 3's and no 4's. Seventy-three percent of these cattle graded choice and averaged 1000 lbs. They may not be the ideal but people can make money with those kind of cattle.

Back to the club calf thing, I think the club calf producers have made their commitment to the youth. Honesty and integrity has been talked about many times this morning. This is very important as club calf producers. These kids and their fathers and mothers come out to select calves in the fall and it's certainly our responsibility to represent the cattle as they are, as the breed they are, the age they are and then stand behind the cattle if there should be any problems. I think that is our main commitment as club calf producers. It was mentioned earlier about the prices paid for club calves. I know sometimes there are some outrageous prices paid but I also know that it costs a lot to set up the program to try and produce the right kind of cattle, hopefully that will win major steer shows. When you go out and select bulls out at the bull sales and you figure your time, the extra things that you do, These \$3000-\$4000 steers aren't high and if you don't believe us, just set up a program of your own and try to produce some. They're not too high. As the gentlemen reiterated this morning, I would sure would rather have my boy or girl grooming a steer rather than spending the same amount of money on a hot rod or motorcycle or not know where he is at or who with. There is no way to put a dollar value on responsibility, growing up and the 4-H and FFA experience.

Again I sure want to thank you for the opportunity to be here this afternoon and will look forward to visiting with some of you later.

2. Cow-calf Industry, Don Lawrence, Nacogdoches, Texas

I want to tell you first an experience about the cow-calf business. It best represents what I have gone through in trying to raise steers and other cattle important to the beef industry. I was raised up around an outfit that produced a large number of cattle and they used Hereford bulls to get color and uniformity and shipped all these cattle on forward contract. In the 60's I started in the business and naturally it worked for them so I thought it would work for me. I did a real good job using Hereford bulls on crossbred cattle adapted to our country. It is very important that you have cattle that are adapted and will do well in your particular environment. By 1973 and 1974 I had about 2000 cows which no man ought to be burdened with and \$600 cows went to \$250. The bankers came in and wanted to talk to me about this big operation that I had. If you have ever had a couple of young bankers on you, you know what I'm talking about. I had just about all I could handle trying to run an operation that's in the red to start with. So in 1974, we started selling cows (approximately 200-300 a year) trying to appease the bankers. I don't know whether that's a nice way of saying we're going to liquidate you, or just what they had in mind. In 1975 it wasn't getting any better as you well know and I had my back to the wall, I made some rash decisions. I had to turn something around. Every cow walking on my place had to have a calf by side and all those calves walking by their mamas' had to be cattle that would wean heavier than the 380-400 pound calves that Jerry was talking about. I started using crossbred bulls on those cows and got my program stabilized.

1976 and 1977 came along, I had liquidated my herd down and met with the bankers once a month discussing every thing imaginable about producing beef to satisfy them and to try to hold this operation together. You know it would have been real easy just to throw your hands up and say, "I quit, we'll liquidate the other 1200 cows that we have and take what little nest egg that we have got left and go home." There was just too much German blood in me to do that. So I kept fighting. The bankers decided it wasn't getting any better, about February, 1978 we had our 14th meeting.

I had them all counted, 14 months in a row, with the same two young bankers from a credit bank in Houston making this trip once a month. We quit counting cows once a year and we started counting about every six months. In 1978 the market began to turn around and I, as every good cow man should, had my budget laid out, my projections laid out and I believed in them. I had whittled expenses to the bone, moved these cattle around on 1 to 5 acres which normally our country runs 1 to 3 or 1 to 4 if you are doing a fairly good job. I had sold my calves several years past to some feedlot people that they had done a good job for them and as early as February, I called them and got a contract

on the 1978 calves, went to my bankers and told them what I could do. There was no more guessing about the projections, there was no more guessing about my weaning weights. I sat down and convinced the bankers and I haven't seen them since. But in 1978 as you well know I sold those calves for .50/lb., \$75,000 to cheap. But I did salvage my cow herd. I had built in more fertility and gain-ability in my cattle than I had realized and in 1979 I had a surplus of over \$250,000 above my notes and interest in that calf crop. We need to take a very serious look at increasing our fertility and our cattle must gain. If we keep the fertility in the cattle, and remember a cow will not breed and will not do well if she is not a good gainer, and must do it on forage, the steers and the heifers out of her are going to do well where ever they go, whether it's the feedlot or back in the replacement herd.

We drive right up to 1980 and 1981 and you know this thing has dipped somewhat. I am still running in the black with those major contributing traits in the cattle and I'm running with \$230,000 less income from my calf crop than I did in 1979. I'm giving you this testimony and tell you one thing. Let's don't lose sight by trying to have the biggest or tallest steer and run off and leave fertility, gain, feed efficiency, and the adaptability of these cattle to the country. The cattle must adapt. We have become cattlemen that must produce from less input costs and it's going to be that way from now on. I am a firm believer of that. We must breed our cattle to be work cattle. They must work the land. We must be able to produce an offspring that will go into the feedlot and perform. I can cite the examples of some of my feedback sheets on my steers. As calves going into the feedlot they are gaining about 2.8, and as yearling they are doing about 3.4. Their choice percentage has been between 70 and 80%. This is the last 3 or 4 calf crops that I have the data on. I think that we need to take this into consideration along with everything that has been said today and remember one thing. If its not economically feasible it shouldn't be there. Thank you!

3. Purebred Industry - Vernon Holcomb, Stanton, Texas

It's going to be hard to talk about something that hasn't been talked about this afternoon. The cow business is such a complex business, and I wonder where it's headed. I do a lot of visiting from day to day and we do so many things in our part of the world, a lot of things we wonder about. I wonder about the size thing, how big is big, how lean is lean, what's wrong with fat? I guess you are kicking around these problems also. But we are here to talk about the purebred business and the influence the steer business has on the purebred industry today. Maybe I didn't realize it had so much influence until I look around today and see so many faces. These people are in the purebred business. I thought maybe just steer jocks, as everybody calls

them, would be here today. But I see a lot of cowmen, cowmen that are serious about breeding programs. I see purebred programs having a big influence on the steer business and I see the steer business having a big influence on purebred programs. Even though most of the money is in the commercial steer and packing industry, still a big influential part is being played by the show steer. I see them leaning on each other.

How important is the show business? I think its great. We never had anything to do with it until about 12 years ago, but as anything else you live to learn and learn to change. We talk about the one gutted steers and shrunk back steers. It's caused from several different things. Certainly we have to have capacity and yet not too much. We still have got to keep the cutability design in cattle. I don't care if a purebred cow sold for \$30,000 or she sold for \$3,000. Whether she is going to John Doe or whether she is going to Rio Vista for embryo transplant. Lines, frame, structural correctness, femininity and capacity are all important. I love all parts of the purebred business and maybe I've got too any irons in the fire but I think they lean on each other pretty hard. We've enjoyed showing steers as a family. Certainly it's not 100% true fact in the Bible, there are some holes in it. There are some holes in purebred industry today. There are some holes in our feedyards. I have been there too. In fact, I was there in the big wreck of 1974 for about \$250,000. That left an impression on me. But as a purebred breeder or as a steer breeder we try to breed a steer that meets the demand in the show world as well as the feedyard. The heifer mates have to be good females, carrying the feminine traits that we require in the female. She has to milk, to reproduce, to grow, to maintain herself as cheaply as we can get her maintained and still produce as many pounds as she can, as long as they are attractive and have enough eye appeal to sell. How much eye appeal to have to is the whole ball game. Maybe John Doe over here doesn't need them very attractive. He may stand all the shoulder, middle and everything else you can put on cattle. He may sell his on facts and figures. Most cattle have to have enough eye appeal at least to get the bull buyers' attention, the heifer replacement buyers' attention, the club calf buyers' attention, and the attention of the judges who try to judge the cattle and talk the reasons. Ah, we snicker and we laugh, but they have got to say something. They hand them a mike and say get up there boy. Explain what you did. So he's powerful, he's got a lot of eye appeal, he's long, he's lean, the best steer in the class, the best heifer in the class, so on and so forth. Nobody is trying to prove anything or get obnoxious in their opinions. We are all in this thing together and we pass the bat around. If you don't believe it you'll get your turn at bat sooner or later if you can stay in the cow business. But its getting to be a multi-dollar business, big investment, big tax write off, you can talk about this business all day. People make fun of the \$30,000, \$40,000 and \$100,000 heifers, fe-

males, bulls, whatever. What in the world are they going to do with them? I do not have enough money to do it, but some people need the tax write off. I think it is great. I am not condemning it a bit. I hope I am in that position some day. I will let a man talk to you that maybe knows a little more about the commercial feeding world than I do. Like I say I have lost \$250,000 in the feedlot business. I know a little something about that too. Steers can get too fat at times, and they can stay too lean too long. I don't know, timing is awfully important. We've talked about all those today on slides, The Dr.'s, their slides and figures and some of them are a little fast for me but I appreciated most of them.

4. Feedlot Industry - Bob Hillier, Guymon, Oklahoma

I think one of the interesting things about what I have seen here today and particularly about this reaction panel is the fact that these men are in the blood and guts of the cattle business. There are no show rings, no glitter and lights. You don't walk out there with your suit, tie, new boots and your new felt Stetson hat. Gentlemen, this is blood and guts, this is dollars. This is where you get sweat running down the crack of your fanny, where you get prickly heat, where you are freezing to death, where you scratch and claw for every 0.1 pound of gain or 0.1 pound of feed efficiency. That's the name of the game and it is serious. In our cattle feeding business, we will feed approximately 300,000 head a year. We will see each and every kind of calf that will walk through our gate. There are tall ones, short ones, fat ones and skinny ones. We have the opportunity to try and work on all the mistakes that other people have made in the cattle business. We get to have that opportunity for 90-120 possibly 150 days. And we are to take these draft horses? I doubt if anyone has ever seen a pound of gain grown between the belly and the ground. You guys are wrong and that's just all there is to it. In the feedlot business, we're after numbers, and believe you me we pay out \$25,000 a day for interest on those cattle. I don't classify that as fun. The only place of business that is prosperous is the bank. Every small rural town you go to, see if the bank and the PCA has got a new building front. I'd like some of that money to stay home in my pocket. Personally the last 3 months I have had the opportunity to enjoy some of that. The one thing that we want to do in a custom feeding business is to take care of our clients. Our clients are people like myself and like each of you. They invest in the cattle business for an opportunity to take an investment and turn it into a profit. They don't do this for fun. They want to make money. It's difficult to explain to a man why his steer gained 3.5 converted at 5 1/2 to 1 and he lost. If anybody has a good answer to that I will let you take over, it's difficult. With the clientele that come to us, they ask us to help them estimate and predict performance as well as profitability in cattle. If we are going to stay in the business, we have

to come forth with the answers. How fast are my steers going to gain? Yes sir, they are going to gain 2.7. What will they convert? They converted 6.5 lbs. of feed per lb. of gain. What does that mean in terms of cost? They will cost 48 cents sir. The cattle had better live up to it. If they don't, we have some explanations to make. What do I do with a set of steers that I told a man to hedge them in June? They only gained 2.5 and are going to come out in July. The June futures are \$72, while July futures are \$65. What am I going to do? Feeder loses money because I made a mistake. And I made the mistake because somebody out there produced cattle that don't perform to our norm. Talk about genetic potential. I think crossbreeding is fine. I have no complaints with it. I think it is good. It strengthens our industry to some degree if its controlled. Uncontrolled we mongrelize our business. We just as well go to the dog pound. Take a guess. We receive many sets of cattle that are nothing more than mongrelized. We need controlled breeding programs and if we get involved in crossbreeding we must have complete control. I reemphasize the fact that height is immaterial to cattle. We want cattle that will excel in daily gain and feed conversion. We want them to gain but they have to consume to gain. It takes capacity and volume in our cattle for them to consume to gain.

Feet and legs, yes, I am certain that they are important. I don't think you want them stiff as a board. You do want cattle to be able to travel fairly well. In the feeding industry, had we listened to the show ring business, people, we would have been in trouble. We have enough trouble with university economists telling us what to do. I'm going to give credit to Bill Able and Gary Minish for stepping out and saying what they did and putting the figure down. They're the first people today that I remember saying this is what I would like in the ideal steer. I want to go on record, here and now gentlemen, you are asking for the cattle to be too big. 13-1400 pound steers, that's not what we need in our industry today. I will give you an example. What are you going to do with a set of cattle that weigh 1400 pounds in the feedlot and they won't grade and a packer won't buy them? What are you going to do with them? There are 200 of them and they cost \$700/head. You got \$140,000 setting there that's costing you interest every day, and they are consuming feed every day. What are you going to do with them? I think one of the smartest things that can happen to you is to put your own money in the business. Amazing how it increases your intelligence. It makes you humble and it gets rid of all preconceived ideals. These cattle are just too big. These cattle do have to fit equipment, they do have to fit boxes, whether you like it or not. They do have to be able to hang on a rail without dragging the ground. We have a packer in our very town, Garden City, Kansas, Iowa Beef Processors who refused to buy cattle out of a neighboring yard of ours. You know why? Because they were too big. You know what excuse was given? They have a

platform that rises and lowers as the cattle pass down the rail. Those cattle hang below the low level of the platform. To split the cattle, they would have to stop the kill line, get off the platform and finish splitting. That's an economic loss to them and what is their way out? Obviously, it is very simple, don't buy them. That's the kind of cattle you want to produce in the show ring? Fine, don't ask us for help. I think the statement, "What has the show ring business done for you?" Answer - nothing, whatsoever was correct. It's a fact, gentlemen, unless you get your ducks together, we are going down separate paths. I think 11-1200 pound steers with 0.3 - 0.4 inches of fat is where you want to be. Shoot for low choice. You are going to have plenty of cattle miss it, so you had better shoot for it anyway.

Honesty and integrity came up today. That is an absolute must. Nobody is fooling anybody by cheating. All you do is discredit yourself and ruin your own personal reputation. It's ridiculous to get yourself caught in such a position. All for the sake of what? I was pleased to see that there are some stipulations on some of these shows. I was unaware of some of them. Performance, in the business at this point and time, as far as I'm personally concerned, is extremely important. In the show ring and in 4-H club calf and FFA programs, you need to involve performance data. The kids can learn something from it. They don't learn anything by just grabbing a lead rope and walking in the ring. They learn something by keeping track of the records, why the animal did what he did and that's what teaches them. Thank you very much.

5. The Packing Industry - Bill Harrison, MBPXL, Wichita, KS

I would like to make just a few comments about the cattle slaughtering business. The packing business, as far as cattle are concerned has changed drastically the last few years. I have only been in it since 1968 and things have changed tremendously. This is only a beginning. More changes are ahead of us right around the corner. We have gone from modest sized kill and chill operations, killing only in the neighborhood of 500-1,000 cattle a day into just a few years later ultra modern slaughter and fabrication facilities processing anywhere from 1,500 to 4,000 head a day. Our company is the second leading packer in the United States. We process in the neighborhood of 10,000 cattle a day. Box beef is a result of this new packing concept and is becoming an everyday way of life in our industry. Companies involved in this type of operation become more aware of the value determining factors involved. Before when we were killing cattle and shipping them out the door to someone else that's where our obligation ceased. Today we are actually doing the cutting of those carcasses, our eyes have been opened to numerous factors that involve value in this product. We must be able to identify and select cattle that exhibit these traits if we are to reap the benefits that are there. Our box beef operation

utilizes choice and good carcasses weighing in a range of 550 to 900 pounds. We utilize only yield grade 3's or better. Yield grade 4's and 5's are sold out the door. We are presently testing the possibility of cutting average and low good carcasses in separate production lines. All carcasses not fitting these criteria have to be shipped out the door. We feel this is the only way to insure an acceptable uniform high quality product. One thing that struck me after sitting here today and listening to comments on varying aspects of the industry, we never have heard much directed to the consumer. I have news for you. That's the only thing that really counts, the consumer's ideas, wants and needs. I think we have an opportunity to zero in on what the consumer demands and work together to produce that type of product. We are all aware of that. In the past few months some of the big chains that we do business with have actually gone clear away from advertising USDA Choice beef which was unheard of a few years ago and have gone to a lean beef program. I think that all of us realize that we have to look at producing this high cutability animal as eluded to by all the talks this morning. Not only because of the consumer demand but also because of the economic advantages it affords all segments of the industry. Our buyers carry an order each day telling them what they can give for live cattle including a \$2.00 per hundred weight premium for yield grade 2 cattle. I don't think anybody else in the industry has done this. We feel that the \$2.00 premium gives the producer an incentive to produce the type of animal that not only we want but the consumer demands. Too often yield grade is thought of only as a fat cover factor. One of the other very important factors in yield grade determination is conformation. Conformation as stated many times today is very important in determining the yield of red or lean meat. Our company has felt for some time that one full yield grade drop in cutability means about \$14.00 a head. In other words, from a 3.5 to a 2.5 you are looking at \$14.00 head difference. Thus the \$2.00 per hundred weight premium we use on the yield grade 2's. Whenever we think of yield grade only in terms of fat cover and leave out the conformation factor, you do not get a true picture. As far as quality grade is concerned, we utilize choice and top good grading cattle. If they don't grade choice and top good we just don't feel that we can afford to utilize them in our program. Cattle that go into our lab operations would probably run in the neighborhood of 50 to 60% choice, the balance top goods. Presently as you all know we are in a very current situation as far as available cattle. Consequently the grades have suffered and the yield grade of these cattle and resulting cutability has improved. Normally we will run somewhere in the neighborhood of 65 to 70% choice and the balance top good. You can see with these numbers we still have a lot of room for improvement. If choice is what we are shooting for, then we are still a long way off the mark. I would also mention here that the 20% standards that Bob Volk used in connection with AK-SAR-BEN will not work. There is not

a lot of difference in low choice and top good but 20% standard won't do. With regard to weight we utilize carcass ranging from 550 to 900 pounds. We do business with a lot of customers who have varying ideas as to their likes and dislikes. Most of their likes and dislikes as we see it are based on one thing, and that's weight. Let's look at just a few subprimal cuts that we produce and these cuts are primarily from the higher priced cuts of the carcass. The cuts include the inside round, boneless strip, boneless top butt, and the 109 rib. The most popular weight range or weight of these cuts come from carcasses averaging 670 to 725 pounds. Considering different variations that we see from area to area due to minor differences in the way producers feed cattle, there are different ways to come up with this 670 to 725 pound carcass. We are looking a weight range on a live weight basis of 1075 to 1200 pounds. So basically to summarize, I would say that from the packing viewpoint, we are looking for a thick bodied steer with well defined muscling, thin skinned and trim resulting in a high red meat yield. This animal should grade USDA choice at a weight of 1075 to 1200 pounds. As has been mentioned time and time again the comments of honesty and integrity have to work all the way through the industry. We are at a point in time that we have to tear down the bias, listen to each other and ultimately to the consumer and work together to produce for that consumer. Thank you.

REACTION PANEL DESCRIPTIONS OF IDEAL STEER

	Adamson	Lawrence	Holcomb	Hillier	Harrison
Live wt, lb	1200-1300	1100-1200	1150	1100-1200	1100-1200
Hip hgt, in	55	53-54			
Fat cover, in	0.3-0.4"	0.3-0.4"		0.3-0.4"	0.3-0.4"
R.E.A., sq in	14	14		14	14
Quality grade	Ch-	Ch-		Ch-	Ch-
Should the Champion steer fit the industry?	yes	yes		yes	yes

My concept of the ideal steer is much different than most. I do not believe that a steer of one weight, frame size, color, and fatness is what this industry is searching for. In reality, the situation is much more complex. No steer is ideally suited to perform well in all environmental/management relationships. Very simply, we husband cattle so we don't have to eat grass and grains. A steer is certainly of terminal intention; however, in our search for the ideal, we cannot forget that what we say about the ideal must also be indicative of, and practical to, sire and dam. I do not believe that the champion or ideal steer should fit the same mold in Mercedes and Portland. Cattle are obviously selected and managed in greatly contrasting methods, and our steer shows must reflect the predominant progression of breeds and types particular to environment, management and demand common to that area. Most of our arid and mountain range lands will not sustain consistent breeding cows which will have a calf that will grow up to be 58 to 60 inches tall.

From the packer viewpoint, the size our cattle can profitably attain should be controlled by three value determining characteristics: quality, cutability and portion size. Days of grain feeding and/or carcass fatness should be our concern in the assessment of quality. Steers simply cannot be so large that they will not have at least .30 inches of fat (opposite ribeye) at 1,350 lb. live or 850 lb. carcass. Conversely, steers must be large enough that they can weigh 950 lb. live or 550 lb. in the carcass and have less than .60 inches of carcass fat.

The insistence on a Choice quality grade with a desired fatness of .30 to .40 inches of fat or less is not realistic. Additionally, it is highly unlikely that commercial feedlots can long term afford to feed and kill cattle with less than .50 inches of fat. Extensive grain feeding adds weight and fat and cheapens the cattle as long as trimmable fat is not added in great quantities.

As carcass weights begin to exceed 850 lb., portion size becomes a major consideration. Let's take two examples for two weights of cattle:

wt.	850		550	
	<u>rib</u>	<u>top butt</u>	<u>rib</u>	<u>top butt</u>
cut	112	top butt	112	top butt
yield to carcass	3.4%	3.3%	3.4%	3.3%
primal weight	14.5 lb.	14.0 lb.	9.3 lb.	9.0 lb.
portion thickness (8 oz.)	.50 in.	.60 in.	1.0 in.	1.15 in.

An 850 lb. carcass would yield a prime rib (112A) weighing $14\frac{1}{2}$ lb. or a boneless top butt weighing 14 lb. An 8 oz. serving from either primal would be only approximately $\frac{1}{2}$ inch thick. The same 8 oz. portion from a 550 lb. carcass would be twice as thick. When one dines in a white table cloth restaurant, he expects the steak or prime rib to be an inch or more thick; conversely, when one dines at a plate coverage type restaurant, he expects the meat to almost cover the plate and the potatoes to be crowded on the edge. The point I wish to make here is that the packing industry can utilize a wide variation in carcass weights (i.e., 550 to 850); however, carcasses much larger than 850 lb. will obviously have so large primals that they are very difficult to market. Cattle can also be too small. In a packing plant, slaughter and fabrication costs are incurred on a per head basis while the resulting carcass or meat is merchandised on a per pound basis. Slaughter and processing charges on an 850 lb. carcass in a typical packing plant would be \$9.40 cwt. vs. \$14.54 cwt. for a 550 lb. carcass. The fixed cost to the packer is 35% higher on the small carcasses. Accordingly, packers generally prefer to kill heavier cattle because more pounds dilute fixed costs to a greater extent during the slaughter and fabrication process. Meat packers have a diverse customer base; the retail trade actively pursues cattle in the 550 to 750 lb. weight categories while the HRI trade deals in the 700 to 850 lb. weight limits. Carcasses in the 700 to 750 lb. weight range are currently in greatest demand since these cattle fit most retail and restaurant demands for portion weight, size and fatness.

From a cutability standpoint, I believe our cattle should have .45 to .65 inches of fat. I also think our cattle should be predominantly yield grade 2's or low 3's. To accomplish this our 850 lb. carcass must have a ribeye area of 16 to 17 square inches and the 550 lb. carcass a ribeye area of 11 to 12 square inches. If we are going to kill heavy cattle, then let's make sure it's because the cattle are correct in muscle and fatness--cutability--and not just because they are 58 to 60 inches tall. Big for a reason is fine! In our search for size, however, we must remember that the small properly finished cattle are the most efficient in the feedlot and are also the highest yielding in our fabrication facilities.

I have tried to present the complexities that daily confront the feedlot and packing industries. The answer to how we put frame size, weight, fatness and muscling together is not the same everywhere in the country. The ideal or champion steer at Louisville and the Cow Palace need not be the same kind, but they must fit the demand and production criteria in that region. We are foolish if we continue to use frame size or height to performance test cattle in the show ring. My ideal steer is a muscular, properly finished (.50 in.) small, medium, or large-framed steer which will grow rapidly (consistently 3.2 lb./day) and which will make tender, juicy, flavorful beef efficiently. Beyond this we are fooling ourselves.

Harry Thomas
Harrold, South Dakota

I think everyone realizes the amount of difficulty summarizing the symposium puts upon this committee. We tried to listen and digest, kick it around a little. We talked to a lot of people here. We talked among the committee and we would just like to summarize what we felt came out of this committee and then probably we may even kick in a little of our own thoughts. You will just have to take them for what they are worth, because we are as human as everybody else. But as I sat and listened from a producer's stand point, I felt that the composite animal for the producer has to be a combination of so many different things. But if there is one thing I got out of this whole committee, the animal has to make money for the cow-calf producer. I feel personally, that we have the genetics now in our cattle business to produce a steer that not only the cow-calf man can live with, but one the feedlot man can live with, one the packer-can live with. We have to get our head out of the clouds and get the genetics into the cows where they will do us some good.

Everyone of the steers that is led into the show ring or goes through a sale barn has a heifer-mate at home. I don't know how important that is to some of the people here today. But from a cow-calf producer's standpoint that is important. Anybody that has bred cows, calved cows, fertility, milking ability, being able to get around the pasture and take in feed, is very very important.

We haven't said much about fads here today. But I know in breeding programs we have seen it a lot in the last 15 years. Fads have probably changed more breeding programs than any intelligent genetic input there has been. I will defy almost any person out here in this ring to tell me that genetics doesn't mean more than color of the hair coat. I believe very strongly that genetics are much more important than any color of hair.

Probably the one other thing that has been talked about from a purebred breeders standpoint is that these animals absolutely must be functional. They have to raise a calf every year, they have to be able to milk and bring that calf in the fall so that he is capable of going on and being able to produce pounds in the feedlot. I would lots rather paint my cattle green, the color of a dollar bill, than I would probably any other thing there is. I think this is something we need to bring across to the youth of our country. Thank you.

Don L. Good
Kansas State University
Manhattan, Kansas

Good evening ladies and gentlemen. First, I want to compliment Oklahoma State University and their staff for staging the National Steer Symposium to discuss the direction of our steer shows, some of the benefits of them, and some of the problems that we are facing today. Dr. Totusek, in his opening remarks admonished us to keep our eye on the steer, search out the problems, try to maintain integrity in this youth program, and to try to define and establish landmarks with regard to weight, grade, dressing percentage, yield grade, and to try to tie down what is the ideal steer. He also indicated that the role of the steer project and the development of youth was of prime importance.

Harlan Richie did an excellent job in talking about the history and the development of the beef industry. He pointed out some very important facts concerning costs of maintenance in the production of beef and indicated the shortest possible days would be the most efficient way to produce our beef. He felt that height measurements would seek their level, that weight ranges for carcasses should be between six and eight hundred pounds, live weight between 900 and 1350 pounds, and that the cattle should have enough marbling to finish at the top end of the good or choice grade. He pointed to the fact that selecting animals for extremely trim shallow bodies might be getting away from capacity that is needed for animals to convert roughages and grains into beef efficiently.

Danny Fox did an excellent job of discussing frame size, growth rate, and efficiency, indicating that frame size might be independent of efficiency in beef production. Gary Smith and Bob Long both pointed out that body composition should receive more emphasis than it has in the past. Gary Smith indicated that consumer acceptability was of prime importance as far as the goals of producing beef are concerned. Bob Long also indicated that muscle can play an important factor in dressing percentage, as well as fat. Industry previously has associated with thickness of fat with dressing percentage much more than heavily muscling in a beast.

The judges, Bill Jacob, Bill Able, Gary Minish, all did an excellent job in describing some of the problems that judges face when judging steer shows today. They pointed out that the judge, in many instances, dictate the type and kind of cattle that come to the shows. Judges who were looking for the long, tall, slim, trim kind would certainly receive their share of those kind of steers at the shows they were judging while other judges who are looking for thicker, meatier, beefier cattle that are not so extreme in height and length and trimness would receive those kinds of steers at the shows that they judge. It was also pointed out that many times steers are not present that suit the judge from the standpoint of being ideal for the beef cattle industry.

Show managers pointed out their problems. They feel that the steer shows are popular and they would like to make them as educational as possible with as few problems, from the standpoint of integrity, as possible. Bob Volk at the Ak-Sar-Ben pointed out that youth were the main purpose and focus on their show. They have done away with the breeds and are classifying the steers all according to weights. Steers must gain two pounds a day. They weighed in April 1, in order to qualify for the Ak-Sar-Ben show. Ken Hartman of the National Western in Denver indicated steer shows are important. They provide an excellent experience for youth

help to broaden their perspective of the industry, and teach them to be good competitors. He pointed out that at the 1983 Denver show, steers would be classed according to their height. He did point out that steers from the premium sale were hard to merchandise because there were too many of them that graded below choice on the rail.

Bob Hillier pointed out that breeding was so important. The cattle have to have the bred-in ability to gain. He also indicated that the feedlots are having difficulty with the cattle that finish at too heavy a weight and that are too tall and long and stringy. He warned that these extremes would not fit the industry to advantage in the future. Bill Harrison of MBPXL said their box beef trade call for choice carcasses with cutability of 3 or less that the consumer demand was for a leaner product, that the carcasses that suited him were carcasses from 670 to 700 pounds.

Some speakers indicated that training experiences in steer shows and projects was not practical and that the steers from projects just simply do not meet the demands of the trade because of the low quality of the carcasses; therefore, the value of the steer projects and steer shows was very questionable from the standpoint of value to the industry.

Harry Thomas, Jerry Robbe, Rod Boling and I have discussed the activities which have taken place and have listened to all of the presentations. We feel that the meeting has been somewhat negative from the standpoint of the steer shows and their value to our industry. I would like to point out that we are living in America, a free country, a country that has put a man on the moon, a country that has the resources and the power to do about whatever we want to do if we decide to do it and are together on accomplishing those goals. For that reason, I would point out that the steer shows should not be criticized except in a constructive way, that if there are things that are wrong, we should go about to correct them and make changes so that they will be beneficial, first of all, to our youth and then to the industry. Profit has been pointed out a great many times during the course of events and prices paid for steer prospects have been cited as being unrealistic and, I am sure that in many cases this is true, but on the other hand, the experience of youth working with animals, learning to associate with them, and being responsible for their care and treatment is in itself a character developing process. Many a young man and young lady have been stimulated by the competitive program of a steer project and steer shows to become great achievers in the industry in later life. Research and development have shown us the heritability of the economical, important traits of cattle. We should follow this research and teach our youth to exploit those traits in 4-H steer projects. If it means that performance information should be provided at the time of the show to be constructive, it should be done. It means if you want to set realistic standards as far as perfection of the champion steer is concerned, this should be done realizing that from one show to another we are not always going to have the exact same specifications on a steer that happens to turn up champion. Maybe we should set 2 square inches of loin eye per hundred pounds of carcass weight and a requirement of yield grade 3 or better realizing that those steers that have a yield grade of 2 or better and still grade choice are superior as far as carcasses are concerned. I think that there is one thing that we must bear in mind concerning the grading of 4-H steers at terminal shows and that is the various environments involved with the steers that are exhibited at a show like Denver. They come from all over the United States. They come from small farm lots, improvised sheds, from modern facilities, and each has had a ration that is different from the other. Some have crowded their cattle hard, some have held them back. Some have put undue

stress and exercise on the animals before coming to the show. Therefore, it is not unreasonable to find cattle that are slaughtered at the steer shows with all the different backgrounds and environments and rations and handling procedures to see them not grade as well as those that might come out of a commercial feedlot that have been handled on a standard ration without stress and under excellent management conditions. Don't take me wrong. I think we should strive to improve the grading of the steers that come to the steer shows but I also know that there is no way in the world that a judge can tell what the marbling will be when he is judging them alive on an individual steer. This was pointed out very explicitly by the judges committee this morning.

In summary, I think the steer shows are here to stay. I think we can do with them whatever we want to do. I think if they are not properly conducted and if steer projects are not properly conducted it is the fault of planners. The grand champion steer is important. He helps to set the show window for the industry. He should be a steer that is compatible with all segments of the industry--the cow calf man, the grower, the finisher, the processor, and the consumer retailer. The steer show is one of the best means of promoting beef in our entire industry.

At this conference, we have had show managers, breeders, packers, feeders, extension people, breed associations, and agribusiness people to discuss where we are going in the steer shows. It is important for us to remember that our country is large and that shows that work in certain parts of the country will not be managed in the same way as they are in other parts of the country; therefore, I don't think that we ought to have, or try to determine or dictate how steer shows should be run per se in various sections of the nation. I do feel that we can have some guidelines concerning the kind of steers that we would like to see win at those shows and I think in reality, there isn't that much difference of opinion of the judges that judge our major steer shows in this country. I know that at times, we do see some extremes that occur and that probably should not occur but I would say this is more the exception rather than the rule. It is important to remember that the steer show does not guide the beef cattle industry on exactly the kind of cattle that will be produced in the future. The market place, the commercial market place, is what really guides the kind of beef cattle that we are going to be producing in America and we are going to have to do it efficiently and effectively if the beef cattle industry is to be competitive, profitable, and maintain the status it now holds. The future of our youth is so important to the future of our industry because they will become the industry leaders of the future; therefore, it behooves the adults that work with the youth in projects and at competitive events such as the steer show that integrity be taught as a highly important factor to be implemented in their project and at the show, as well as in their personal lives, if they are to be successful in the future.

There were 238 people in attendance, with 145 answering the Pre-Steer Symposium Questionnaire at the start of the first day. These people were invited to the meeting the first day of the Symposium, and included a large number of show managers and judges. This Questionnaire was also answered at the close of the first day's meeting by the same people. The changes made to the answers in the questionnaire reflect the

change of opinions created by listening to the speakers explain the requirements of each segment of the beef industry, and how a show steer compares to the requirements of each segment.

The following is a copy of the questionnaire and shows the changes made to the most popular choice to each question.

PRE-STEER SYMPOSIUM QUESTIONNAIRE

1. Please circle your major commitment to the industry. (Industry includes all segments in attendance.) Identify only one.

	%
a. Judge	9
b. Show official	19
c. College personnel	28
d. Breed association	10
e. Club calf producer	13
f. Purebred producer	10
g. Packer	2
h. Commercial producer	6
i. Feeder	3

2. What range in weight is best for an industry steer?

	% am	% pm
a. 900-1000	0	0
b. 1000-1100	11	3
c. 1100-1200	59	66
d. 1200-1300	23	23
e. 1300-1400	1	0
f. Over 1400	0	0
g. None of the above		

3. What range in height is best for the industry steer?

	% am	% pm
a. 52 or less	2	0
b. 52-53	5	6
c. 53-54	14	24
d. 54-55	25	32
e. 55-56	19	18
f. 56-57	15	7
g. 57-58	4	1
h. 58 or more	1	0
i. None of the above		

4. What range in fat is best for an industry steer?

	% am	% pm
a. .10-.20	1	0
b. .20-.30	34	14
c. .30-.40	52	84
d. .40-.50	10	1
e. .50-.60	1	0
f. .60 or more	0	0
g. None of the above		

5. What size rib eye is best for an industry steer?

	% am	% pm
a. 10	0	0
b. 11	1	0
c. 12	5	2
d. 13	18	9
e. 14	45	77
f. 15	17	7
g. 16	5	0
h. 17 or larger	1	0
i. None of the above		

6. What quality grade is best for an industry steer.

	% am	% pm
a. Standard	0	0
b. Good minus	1	2
c. Good plus	21	17
d. Choice minus	66	76
e. Choice plus or higher	6	1

7. Should steer shows require a minimum daily gain? (such as 120 to 160 days)

	% am	% pm
a. Yes	58	76
b. No	36	21
c. No answer	6	3

8. If yes, what should that range in gain be?

	% am	% pm
a. 1.0-1.5	1	1
b. 1.5-2.0	3	3
c. 2.0-2.5	28	21
d. 2.5-3.0	21	48
e. 3.0-3.5	6	5
f. 3.5 or over	1	0
g. None of the above		
h. Left blank	3	16

9. Should a judge be provided with data?

	% am	% pm
a. Yes	65	83
b. No	32	15
c. No answer	3	2

10. If your answer to No. 9 is yes, please circle types of data desired.

	% am	% pm
a. weight	48	68
b. height	21	57
c. average daily gain	54	72
d. fat thickness	21	26
e. age	30	39
f. other		

11. How should classes be divided?

	% am	% pm
a. weight	30	22
b. height	8	19
c. breed and weight	26	14
d. breed and height	12	4
e. breed and weight and height	14	27
f. other		

12. A Grand Champion steer should fit the industry.

	% am	% pm
a. strongly agree	48	55
b. agree	46	42
c. disagree	1	2
d. strongly disagree	0	1
e. additional comments		



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