

ation results in more practical results, while temperature with no abuse is generally impractical. Packaging materials continue to improve, with bone guards being laminated into barrier shrink bags – again improving package integrity.

Improved utilization of variety meats, tongues, hearts, oxtails, tripe and beef kidneys has been achieved by marketing these products “fresh.” Vacuum packaging and storing at 28° to 30°F have resulted in extended shelf life. IBP markets 15 styles of tongues – fresh, skinned, and now the new precooked tongue.

New technology for mechanical reclaiming lean beef is nearing USDA approval. Partially defatted beef tissue has been upgraded to partially defatted chopped beef, due to improved heating and chilling techniques. By utilizing mechanical separation equipment, partially defatted chopped beef can be upgraded to beef trimmings. This can mean a significant improvement in making beef protein more competitive in a world market.

Beef tenderness continues to be a major issue in consumer acceptance of red meat. Electrical stimulation has pro-

vided improved tenderness, along with aging beef in vacuum bags. Aging subprimal beef in vacuum bags for more than seven days is impractical and improvement in tenderness and flavor is somewhat questionable. Perhaps mechanical tenderization is needed at the packer, processor and retailer levels to insure consistent tenderization.

Export markets continue to be a great resource for adding value to the carcass. Parts of the carcass that currently have value in foreign markets:

1. Hanging tenders
2. Outside skirts
3. Leg tendons
4. Heart
5. Brains
6. Tripe
7. Small & large intestine
8. Weasand meat

There are major changes occurring at all levels within the beef industry. Applying current and new technology to consumer needs is the challenge of the future.

Discussion

Session One

J. Leising: A major question concerning this whole area is “What will be the impact to the industry and to the total food chain by removing more fat from the carcass?” Jim Wise, would you give us your perspective on that question and some of the effects that it may have on yield grading?

J. Wise: There are a million ways you can go on this. One of the things Jerry and I were discussing is that we are basically looking at more of the ¼-inch trim programs or the closer trim programs in most of the beef retailing. There is going to be a lot of rethinking of the marketing process, I believe, and we are going to have to get away from the dressing percentage concept. If you want to put a lean product in the counter, then “high dress – high yield” is kind of out the window. Those are low-value products now and we are eventually going to see more pressure on producing and identifying the more valuable, higher-cutability carcasses; at that point, we may have to try to get more detailed criteria, a more refined yield grading system. Other things we have been hearing discussed is whether packers can do some additional trimming, and whether it has to be done hot versus cold. These are issues that are going to keep surfacing and there is going to be a need for help from the academic world, industry and government – we are all going to have to work together in this.

D. Parrett: We all understand the concepts for lean beef and the progress in moving that way. Every time I go to a beef meeting in the winter, the producers say “You university guys keep saying that and the packer-buyer keeps saying, feed them another 30 to 40 days.” How much lag do you think there will be for this lean concept in beef production? How long is it going to be, in your opinion, from an industry perspective, until this thing is really going to take hold and run?

Leising: I can comment on that. I do not have the answer. I wish I had a crystal ball that said, “It’s going to be two weeks or a month.” The large retailers of the country are really demanding it. I was in a meeting in Dallas. Maybe some of you were at the same meeting (the AMI-FMI meat marketing meeting). It was nice to see the retailers, I am talking about the Krogers, the Safeways of the country, standing up and demanding that the packer create a product that is leaner. They have had them in place for awhile. It is a matter of the packer responding to that, and they are in the process of doing that. Someone else here may have a comment as to the timetable on that. I do not think we have seen the total effect at all, at this point.

D. Buege: What trend do you see in terms of quality grade from the retailers and from other sources you supply? Are they still sticking with Choice to a large degree, or is there more movement towards ungraded cattle — Good and so on?

Leising: From what I have been exposed to, it is a very mixed bag. Each retailer has their specific program and profit objective, and some use Choice, some use no-roll or the Good grade. I think it is going to remain very mixed. Again, it is how you merchandise that particular product. I think there are some very good opportunities in the no-roll area to enhance that product. It may be non-traditional type retailing that offers those opportunities, though. Certainly there is some good research going on right now in the area of marination of no-roll type meat to improve the tenderness of that product. For example, the Ponderosa Steak Houses of the world, the Bonanzas, those types of steak houses are successfully using this type of program, and it is growing. I think what we are really discovering is that we can marinate a steak, we can needle-tenderize a steak and improve the quality of that product.

G. Davis: I just want to comment on your first question. I

think one of the things that amuses me is the remark about rendering. It seems as if they need to be spending more time on figuring out what to buy and providing incentives for it, rather than figuring out how to build more rendering plants. I think one of the things that the literature is devoid of is any definitive studies on total trim. According to some of the early work done by Charlie Murphey in 1965 and earlier by some of the people in this room to define the differences among the yield grades, there is about a \$9 per hundredweight difference in retail value, but that was based on 1/2-inch trim. Of course, I think if you talk to Mr. Murphey and some of the others, they are disappointed about the effect 21 years later that the yield grades really have had on the livestock industry, because they do not have the range and spread that really exists.

Now we are talking about total trim and muscle boning, and I think that whole set of data needs to be re-evaluated; because when you go to total trim, you are thinking of 0 to .1 inch of fat. We have a little preliminary data on a very small study, but we compared yield grade 3.5 to 1.5 with carcass weight being held constant and found there is a 65-pound difference in total trim of roasts, steaks and lean trim between the two carcasses. You can figure that out, but that is a substantial amount; if in some way this could be related to a producer incentive program, then maybe we will have the supply. This spring, Jimmy Wise sent me the consist of the current population and it is disappointing to notice that there are more Yield grade 4's than 1's. I think that is correct, isn't it Jimmy? A little higher percent of 4's than 1's, which tells me that maybe we ought to have some programs where the orientation should be toward yield grade 1 and then maybe we will certainly increase our percentage of 2's. Then the accidents will be 3's, and there will hardly be any 4's. I think just talking about yield grade 2 is not far enough to go. I think you really have to go farther, and particularly with what you are saying here.

Leising: I guess one of the questions I have for you is what progress have we made in the area of yield grades in the last ten years? Have we seen a move towards yield grade 2?

Davis: I have asked that question. You would think there would be a move; I saw the consist work that was done in your shop, Jimmy and Mike May, and I think the average yield grade was 3.4. Then there was another study repeated this spring and the yield grade average was 3.3. Is that correct over about 10,000 cattle? It has not moved much; I think I asked that question of Mike May and he thought maybe the kidney percent had moved down slightly because the '74 data indicated it was 2.5%. I think now that it might be a little bit less. The final yield grade's about the same, and all you have to do is look in any of the coolers. Those of us who have worked judging teams for the last several years go into cooler after cooler and have no problem finding rails of yield grade 4 and 3 cattle, and yield grade 3 cattle are 1/3 fat. When you are talking about total trim, you are talking about going down to 5% to 10% fat in some of those cuts. What are we going to do with all that extra fat?

Wise: On the consist, though, this past year, yield grades 1 and 2 combined have been representing about 45% of the graded cattle; 3's are just a little over 50%. Five years ago, those 1's and 2's probably were closer to 25%. So we have

had a pretty dramatic shift in the last 4 to 5 years. It took a long time, though, from the mid-70s up until just the last 2 or 3 years to really start seeing that change. There has been some progress made on shifting the overall population down quite a bit.

R. Bray: In your opening remarks, you indicated that some packers are now moving towards retail-ready cuts, and I understand this is happening with some. How fast is that occurring? From what I gather, there are 2 or 3 large packers that are really thinking about this very seriously. In fact, they are doing something about it. To what extent will they make the entire carcass retail-ready? If you tell me in your answer that they are moving very fast, then I think that's going to be part of the solution to the question raised here. When the packer has to cut those and sell them for what they are worth retail-ready, he will be taking care of the problem that the retailers now have. I would like your comments.

Leising: The packers are not moving in that direction fast. They are moving slowly. There are a couple of progressive companies who are doing tray-ready beef today. It takes a different expertise to make the product tray-ready. Tray-ready for retail is certainly one approach, tray-ready portion control is a totally different ballgame. To move towards the tray-ready concept for retail alone is feasible, but will take a lot more facilities and quite a bit more investment, and so you are going to see that move very slowly. I think the removal of fat from the carcass is a very big first step, and beyond that is fair game.

D. Schafer: Relating back to the comment on not seeing a whole lot of progress in change of composition or yield grade; Jimmy corrected that idea. Three or four years ago I presented a paper on that particular point, and this trend was already evident at that time. There was not a great change in yield grade consist up to that point, but the weight of the carcasses and the animals coming in was getting heavier. If you look at the data of the last two years, carcass weights have gotten markedly heavier. So I think that if we were slaughtering them at the same weight, we would see a great increase in the cutability or yields. But the industry seems to have adapted to keep a consistent composition by going to heavier weights on these new exotic breeds of cattle.

J. Hillier: In your processing at your plant, what constitutes an ideal chuck for this processing? Give us the weight, the quality grade, the cutability grade, maturity, if you will please.

Leising: I can't comment on that question very well, because we don't process chucks. We deal with the foodservice industry and that market does not accept the chuck product very well. We've boned chucks experimentally; we've studied it.

Hillier: Well, take another cut then, what do you use?

Leising: Quite honestly, we don't have a choice. In other words, we're a processor and we pretty much buy what's on the market. So we'll buy a yield grade 2 or yield grade 3 subprimal and break it from that point. The IBPs of the world and all the other people that are in that business have pretty much set a standard of yield grade 3 or better as something that they'll break. Beyond that, there's no standard. If you want to get into the select or no-roll grade, there is a trend toward buying the Holstein type of animal from selected packers because it's a leaner carcass, has less internal seam fat, higher yields and quality, texture and tenderness

equal to Choice grade beef.

Question: What about maturity on this beef that you take?

Leising: From a maturity standpoint, young beef, A maturity in most cases.

A. Miller: I wonder if you could comment on whether or not there is any progress being made on automation of beef boning lines. That is, have robots been incorporated, is there anything in the wind about this? We're very interested in the use of water knives in particular for cutting a variety of muscle foods. Is there any activity in the industry in this direction?

Leising: Does somebody want to comment on that? Anybody been involved in that kind of work? My only comment on it is that it's being tried very unsuccessfully at this point. A lot of people have a lot of different new systems out that they would like you to try and use, but they really haven't been that successful. In the poultry industry, the same types of systems have been used, but cutting poultry muscle is a little different than red meat.

M. Dikeman: Jerry, as a purchaser of beef, do you have any preference for whether that beef has been spray-chilled in a cooler or dry-chilled?

Leising: Quite honestly, we buy on the basis of yield and price and according to a break-even equation on each packer and on each cut. Whether he dry-chills it or wet-chills doesn't make any difference as long as the price and break-even point is there. In other words, we track yields by cut and by packer. It's all on computer sheets so that when we go out to buy, whatever system he's using doesn't make any difference because the yield factor is built in. There's been a lot of discussion on chill methods and excessive moisture during chilling, and I think the inspection service is getting a better handle on that all the time, from what I understand. Perhaps carcasses yielding more than 100% exist.

T. Rourke: I'd like to ask a question about the slide you showed with the vacuum package steaks that have bloom. Could you extrapolate on that, tell who's using such a product, how well it is coming along, and if they have any problems with it?

Leising: I really can't talk too much about that. You have some people from the American Can Company back there. They can probably talk to this issue a lot better than I can. By selecting the proper film; the proper storage 28° to 30°, you can maintain color in product. That particular package that you saw was done in a Bi-vac machine. The folks at American Can say there's lots of packaging for retail cuts. Maybe they'd like to comment on that. What is technology on retail packaging?

D. Galloway: I assume the package you had up there was frozen. In a frozen package, films exist that have a high degree of oxygen permeation rate. When you get into a refrigerated package, you're dealing with a little different type of film structure. Then you're dealing with a product that has a high oxygen barrier or low permeation rate, so you flip way over on the other side and start dealing with color differences. You can maintain a bright red color in a frozen state with a high degree of oxygen permeability. If you have that high degree of oxygen permeability in a refrigerated state, you're going to promote discoloration – you're going to end up with the metmyoglobin problem. Basically, then you deal with films that have the low oxygen permeation rate and the deoxymyoglobin color similar to what you get in boxed beef.

So, those films exist.

There are techniques that are available to create the bright red color in a barrier package, but some of those are not accepted by USDA or FDA – like using carbon monoxide and things like that. There are gas-flush systems where you can maintain a high oxygen environment (or attempt to, at least) in what's called a modified-atmosphere package. It is not controlled-atmosphere packaging, which a lot of times it's referred to; because, in a controlled atmosphere, you'd really want to maintain a certain degree of oxygen concentration in that package which would allow you to keep the color. Of course, with a high-oxygen environment in a barrier package, you can create microbiological problems, too. There are issues, and really what it boils down to is what's going to be accepted by the consumer in terms of the color.

Sometimes I think we may overreact to what the consumer really considers a problem in terms of color in red meats. There are systems and there are films that exist. There are also the natural phenomena that you can't overcome; I think it's a matter of someone taking an approach to go out in the market place and understand what the consumer will really buy. We've been involved in some of those studies; it's interesting that a very small percentage of the consumers really commented about the darker color – the purple red, deoxymyoglobin color. We've been involved in 2 or 3 fairly large-scale studies, so I think that product can sell.

Leising: It seems that if we would sell frozen meat, then we would have a very acceptable product. If we decide to sell it refrigerated, we have to do a marketing job to convince consumers that dark purple meat is acceptable.

M. Hunt: Some other technology that really hasn't been mentioned deals with video image analysis; I wonder if you might comment, either from your point of view or from the packers' points of view, on whether such technology is going to be used to help control some of the fat trim? Can it be used in any quality assurance types of programs, such as a scanning on a ground beef line or trim line?

Leising: I really can't comment on that because I'm not close to that type of work. There have been some people who have tried it. I don't think it's being used currently in the industry. There are certainly some very good rapid fat analysis methods that have been developed which are quite accurate for ground meat systems. In terms of on-line scanning, I'm not aware of anybody who's doing that. It has been talked about a lot, over the years, but it just doesn't exist. Maybe somebody else knows something about that.

I. Yustus: I can say that the VIA procedure is being used conventionally in England at the moment. I did see an operation just a few months ago, so that's actually being used on a regular basis now.

Leising: To do what?

Yustus: To actually monitor the level of trim. I didn't see the particular system, but they actually have a system operating where there are two lines so that they can blend to a specific lean content. So that is in use at the moment.

Leising: Do you know what company makes the equipment?

Yustus: The company is Claviscan. A lot of the developmental work was done at the Food Research Institute in Bristol, of course.

N. Marriott: A lot of the discussion this afternoon has

suggested that we need to make some definite moves as an industry to produce a leaner animal – specifically beef. Yet I guess I am somewhat concerned myself about the dichotomous situation we experience because of the fact that we know (as a result of our principles of growth and development) that, with this leaner animal, we certainly reduce its chances of grading Choice, and we're aware of how most consumers and retailers are experiencing a love affair for something that is U.S. Choice. With this in mind, what is your idea of how we're going to experience this in the future? Which direction are we likely to go? Are we going to try to eat our cake and have it; are we going to try to produce the leaner animal and accept whatever comes along; or do we continue to lay down enough fat on these animals that we increase the chances of something that will grade U.S. Choice?

Leising: There has been an expressed interest the last 10 years in moving towards the yield grade 1 animal; as we've talked about earlier, I think if we can pay the producer to produce that lean animal at the Choice grade, we're certainly going to see more improvement in that area. I think we're foolish to think that all animals will be yield grade 1 or 2, but as the pendulum swings, I think we have to produce the product that the consumer wants in order to compete in the market. If the consumer wants lean beef, that's what we're going to have to do. Yes, it will cost more and the question is: "Will the consumer pay it?" In some of the marketing studies, they've shown that they will pay a parity price or a price that is more, but that yields a higher quality product. At what level that settles out, I don't know. I think we have to be careful not to lose the flavor, texture and tenderness that we've developed over the years through the grading system. To create a product that is still more tender without all that fat is perhaps the challenge that this group faces.

G. Dolezal: Jerry, with reference to improvement of products using muscle boning and trimming, I was hoping that you would address the labor cost portion of that value added; and then, secondly, with that starting either at the packer level or at the processor level, what impact (if any) would you foresee this improved efficiency having in value added on producer returns and live cattle prices?

Leising: I really can't comment on that. I'm not at the packer level, I don't have those numbers handy. If I did have them handy, I probably wouldn't share them because this is a very competitive area. Maybe someone else has some idea, some information in that regard. I think the packer today is trying to determine the answers to those questions you just asked. I don't think they know at this point. I think they have a good idea, they've done a lot of boning tests, a lot of trim tests. I think it'll amaze you how efficiently they can do it, because the lines are in place to remove fat and bone.

Davis: I want to respond quickly to Norm's question. I think that if you look at some of the literature, Glen Dolezal's and Daryl Tatum's work, that was reported in '81 and '82 *Journal of Food Science and Animal Science*, shows that about a minimum of Slight 0 or about 3% intramuscular fat and 90 days or more on feed will give you acceptable eating quality. We're going to hear tomorrow from Savell and Francis when they give the report on the National Consumer Beef Study, that one of the conclusions from that study was that whether the consumer wants Choice beef or whether they

prefer leaner beef in terms of intramuscular fat, neither of them desires the outside fat.

So I think we need to utilize some of this previous research that shows that a minimum amount of fatness coupled with minimum amount of days on feed might hook into some of the branded beef programs that are starting to be promoted. There's a large market for Choice, and always will be, but I think they also need to address pulling off the fat from the outside. I see a very clear demand for two products here; I don't think that just because it's not Choice, that it cannot be acceptable in eating quality.

Then I wanted to make a second remark. You said something about Choice 3 or better is acceptable, about IBP processing that product. I think that's something we probably have to take some of the blame for as meat scientists, in that many of us work with judging teams, and with carcass shows. For years, we've helped imply to the industry that Choice 3 is acceptable. I really have some doubts; as a matter of fact, now there is no question in my mind that a 3 is too fat. I think we've helped promote that jargon that it really is acceptable; I believe that when we start writing specs in the future and teaching our students, we need to start taking 3 out and inserting a 2.

Bray: I'd like to change the line of thinking here a little to the slide you showed on precooked products. You showed a Dewitt product and I'd like to know how much of that is going on at the present time. How much of that precooked, frozen product is being developed for the market and what is the future? Is there going to be a lot more produced? Maybe a followup question to that is: "What are the major problems with precooked, frozen products?"

Leising: Thank you, Bob. Those are good questions. In another session going on at this time, they're talking about a lot of those issues and they probably know far more about it than I do. The Kroger Company has introduced a line of precooked product that is sold refrigerated in the retail case. I think there's a line of about 26 products, something like that, and it's made up of pork, beef, chicken and turkey. They've tested and found that program to be very successful, by their standards. I don't know if it's successful within a company or within an industry, but within their standards, it is successful.

It consists of a precooked, split beef inside; a precooked strip steak; a ribeye steak; pork spareribs; a couple of turkey breast items; precooked chicken, and quite a few pork products. The Wilson pork line of precooked pork loin, precooked pork tenderloin and selected muscles out of the ham that have been pumped with salt and phosphate and sold in the refrigerated fashion. The top sellers of that whole list of products were the three or four pork items, which surprised a lot of people. My personal opinion is that the precooked ribeye steak or the precooked strip steak is questionable, because it's such an easy, convenient product to prepare and you do change the quality and eating characteristics of the product by precooking it. The pork products and some of the chicken products really precook well and they reheat well in the microwave.

The principle behind this whole program is microwave reheating. All of the commercials and advertisements that have been put together are "microwave reheat." Long-term, I think this is the way for the future. Everything is saying that this is where we're going. I don't think we've perfected the

system yet. I think we have a need for some real creativity in this area. We haven't utilized the natural spices and seasonings and ways of creating an acceptable flavor in this product. We're just beginning; I think that's a real challenging area right now and that going towards the muscle boning system in selecting muscles that will reheat or be precooked in a certain fashion is certainly the direction to go. However, to do this just with meat is very difficult. Perhaps adding some upscale rice or vegetables with meat is a lot easier item to sell in today's market. I think that selling meat by itself is a real challenge; as you look in the frozen food case, you can see the success is occurring there today. We need to somehow carry that over to the retail fresh case. My personal opinion is that it's going to happen in the deli before it happens in the retail meat case. In other words, the deli programs that are being put together right now are focusing on, not frozen, but fresh. They have all the elements in the deli to make a total meal; and I see a drive-up window at the deli and I see them competing with all the fast-food people, and I see it happening relatively quickly.

F. Parrish: Jerry, you've alluded to the many things that are happening here in beef processing. I wonder if you'd like to comment (or some others may like to comment also) on what you see as some of the more researchable problems that university and other scientists might contribute to in future processing of beef or meat products?

Leising: I want to make a comment and then I'll turn it over to someone else. In my work and what we're doing, it would be helpful to take all the muscles that we currently pull out of the carcass and provide them with a tenderness score under dry-heat methods and moist-heat methods. As we go to select muscles to use in a given product, we need to have available that tenderness information under different cooking conditions to select the muscle to use in the product. A lot of that information is available, and all the research has been done; it's just a matter of collating it and making it more accessible to industry. I think it would be a worthwhile project, maybe using some sort of universal scoring system for tenderness.

Parrish: Do you see warmed-over flavor or any type of research on additional flavorings or anything like that? Is that a possibility to look at? Would this be something that researchers could devote some time to and have some useful information for practical application?

Leising: Absolutely. I think we've talked about this warmed-over flavor a lot; certainly it's a hot topic in terms of research, and I understand that there's a lot of research going on in this area. I think it needs to be brought forward and published as quickly as possible because this is certainly the priority. We've done work in that area and we feel that using natural meat drippings and seasonings and things like that can really go a long way toward reducing warmed-over flavor in products. Any other comments?

J. Secrist: We discussed this at length in the fast-food processing section. We got into the things that academia can do for the meat industry and for the buyers of meat in the country. Speaking of the warmed-flavor, we need to find some ways of working on the oxidation processes that go on in meats and the tremendously long and every day longer logistical cycle it takes from slaughter to the plate. The days of bringing the meat in the back door, preparing it and selling

it to your customers across the front counter are gone. We have multiple people, multiple institutions and companies in the act who prolong the time at which it goes to the ultimate consumer. We don't need academia to work on the use of antioxidants, because one of these days the FDA is going to say "It's a nice antioxidant but you can't use it." We need to find some ways of blocking the oxidation reaction which takes place in the meat cuts; to block it before it does what it's going to do to us, and warmed-over flavor is one of the things it does to us. So, that's a big area. It's been worked on many years. That doesn't mean we stop working on it. That means you keep on working on it until there's an answer to the problem because it's going to be a needed answer in the future.

As you probably know, I've been wrapped up for years in what they call restructured meats. When you get away from flaked-and-formed, when you can use parts of the carcass like the chuck that have connective tissues, but you break down the connective tissue in your flaking process so that the detection of that connective tissue is not accountable to the consumer – that does not make a good roast – that doesn't make the best steak. Section-and-forming and chunking-and-forming are the answers to simulated roasts and simulated steaks, but we're caught with the fact that we have to use the hind quarter. We can't use the fore quarter because there's too much connective tissue there.

When you take a carcass and break it down into chunks (maybe four and six-ounce chunks) and put those back together again, or take muscle systems and seam them out and put them back together again and massage them, you have connective tissue which is very comfortable to the consumer. So, we're stuck primarily with the round.

We need people to work on enzyme systems, collagenase enzyme systems which are specific for collagen without attacking the muscle structure so you still get the chew that you're looking for, but you can eliminate the objections to the various connective tissues. That's not an easy task, but it's something that's going to be needed in the future, and how long it takes is up to you. But these are many things that you people can be working on.

I envision the whole meat marketing picture to be entirely different than it is today. I envision a store, a retail store, to have premolded products out there (whether they be steaks, or whether they be roasts, or whether they be hams), but these will be manufactured products, not as they come off the carcass naturally. In order to do that, we need to take the labor out of boning. People have said that we've gone a long way in boning, but it still costs a heck of a lot of money to the consumer to pay for all this boning and trimming that goes on.

From you food engineers and from you mechanical engineers out there in academia, we need mechanizations to take a hot-bone carcass and take the parts that are labor-intensive boning and put these things through a mechanism that will strip the carcass or the parts of the carcass meat. Randomly strip it off, let it fall into a pile and then do something with the pile. Remold the products into what you want or what the industry wants. These are things that need to be worked on by academia. You show great promises to us and we hope you continue to do that for us.

I can see in the future a retail store with no chilled meats in

the counter, they'll all be frozen meats. There'll be preformed meats in the counter; as far as objecting to the purple color of freezing, consumers can be shown pictures of what it's going to look like when they get it home. They can be taught how to know when they're buying something differently when they thaw it out and it returns its bloom when they get it home. These are things which I think we have to think about.

Session Two

R. Field: You mention the need for improvement of tenderness, and yet you also mention electrical stimulation, blade tenderization, marination and now cooking methods. It seems to me that one or all of these solve any tenderness problem we ever had if used on the proper muscles. I'm not sure what kind of thing you're talking about when you say we need to improve tenderness. Would you react to my statement and enlarge on the question?

Leising: Ray, I think we do know a lot about tenderness, but I don't know if we know that much about tenderness in all the different muscle systems. Certainly needle tenderization works in many applications. In fact, we probably use it across the board. It's probably not being used in the retail market at all. Maybe that's where it needs to be used. There are a lot of other ramifications to that comment. I think the enzyme systems that we're working with have been developed a number of years ago. I'm not convinced that there aren't better systems than we have today that we can put together. It certainly hasn't been emphasized.

Field: So, when you're talking about doing more work on tenderness, you're talking about some of these kinds of things for improving tenderness. You're not talking about necessarily breeding or feeding for tenderness.

Leising: No.

Field: Let me follow up the question on blade tenderization just a little bit. One thing that's held it back, perhaps, is reduced shelf-life when it's been done and then the product is put in a vacuum package and held a while. However, my impression is that when it's being done most successfully at retail, it's being done right in the retail store, then packaged and sold. Is that right or what would you like to see done on blade tenderization? How should it be done?

Leising: I think ideally that if it could be done at the packing plant level, we would perhaps find more uniformity and consistency in the product.

Field: Would you agree that it reduces shelf-life some?

Leising: Most of the studies that I've looked at have shown that. I think that packaging technology has been improved, and sanitation at the packing plant level is constantly being improved. What I'm saying is that there's an opportunity there. I don't think we've totally done everything right when we've done that in the past.

Field: I'd like to follow up my tenderness comment with a flavor comment and see what your reaction is. I'd like to say the same thing, that we have a number of ways, through spices, precooking, marination, for altering flavor or enhancing flavor. Is this the direction we should be going: continuing to improve flavor versus feeding to the Choice grade because Choice beef is more flavorful? How do you feel?

Leising: Somebody else might want to pick that up and

talk about it a little bit.

D. Huffman: Ray, I think several things are stymieing the beef industry. Probably the principal thing (and I don't think anybody will disagree with me), is the fact that we've got to change our feeding habits. We can ill afford to continue to put that kind of fat on. We hear that Kroger is going to trim down to ¼ inch but a maximum of an inch on any cut. A maximum of an inch? We have no business ever having that much fat on a beef carcass. I think we've simply got to change the value system. The producer is feeding, very obviously, to the Choice grade because that's what he's being paid for. The system's got to change. If the system would change, then we'd no longer butcher up the carcass the way we are; we could take out some muscles the way we should be taking them out. Take out intact L. dorsi. Forget about cutting it in two at the 12th and 13th rib. That's the stupidest thing we can do. We should cut it, if we're going to cut it, at the 10th rib. Why have two odd pieces? Because that's the way we have to do it in order to grade the carcass. We've got to change the system.

I was interested in one of your comments that this is a small muscle, it only weighs 2 pounds. How many of you have been in a chicken boning company? The whole chicken only weighs three pounds. They ship carload lots of muscles that weigh an ounce or two. We've got to change the way we think in the whole beef industry. Oh, and one other thing: I think Publix in Florida have a needle tenderizer in every store.

J. Carr: What do you feel are impediments to exports of meat today?

Leising: I think that we probably have an oversupply of protein in the world and we're all competing on a protein market. We have to compete in that market and compete at a very high quality level. We compete well on some items and on some items we don't. Along with that, we have a lot of political involvements that limit trade, particularly in the European countries. I think our constant improvement and advancement in these value-added products that we're trying to sell (whether it's a precooked or precooked frozen item that we're selling), offers some new export opportunities for us. But, again there's an oversupply of protein. It's a matter of distribution and so we have to compete. IBP has been very active in the export of products for years and they've been very good at developing specific items for countries. I see packers continue to do that because they simply go where the demand is.

V. Cahill: Dale, I'd like to react to your comment. I fear that if we take the fat off of beef, beef will then be playing in a different league. They'll be competing with the 39 and 49-cent product. Do you think that could happen and do you think the beef industry could then exist?

Huffman: Vern, I think that there's an opportunity for lean beef and there's an opportunity for fat beef. The notion that every animal that comes through the system has to be Choice beef in order for that producer to be rewarded is ridiculous and this is where we are. The sooner we face up to this, the better off the beef industry will be. You tell me how you're going to reward a producer other than rewarding him for Choice beef. He's not going to be rewarded.

On the export side, the rest of the world doesn't eat this fat beef, and either we've got to take the fat off the beef before

we ship it overseas or we've got to go for that particular niche. Now, there are markets where you can use fat beef, but I attended an export meeting last year with the Meat and Livestock Commission in England and we had reports from all the EEC countries. Every one of them showed slides of completely denuded beef. They simply don't want this kind of fat. About the politics overseas: When you're dealing in an arena where you have subsidized meat production in countries like Denmark, it's darn tough to compete. Vern, back to the specific question you raised, I think there's a need for everything. I think we need cattle with less fat on them. Not all the cattle, but I think we need to devise a system for rewarding producers for cattle that don't have fat on them. We need to produce lean meat.

G. *Taki*: I work with the seasoning and tenderizer people and our customers are dissatisfied about not having a tenderizer or a seasoned salt without sodium. So you really have to have both. You have to have the salt substitute and you have to have the low-sodium seasoning for those people who need that. You see the same thing in the beef. You have to have beef with fat because I love my hamburger with fat, but then when you go out and talk with the consumer, many consumers look for lean, lean meat. So you just have to provide consumers with the choices they want. This is true with the seasonings, true with the meats, true with the low-calorie, frozen food.

E. *Wierbicki*: I have a question. You talk about frozen beef. I wonder if acceptance, for instance in Europe and in Japan, has been improved to buy frozen American beef? I know they like fresh American beef with its characteristic flavor; but to my knowledge, they don't particularly want to have frozen beef. Am I correct?

Leising: From my understanding, we're exporting mostly frozen beef to Japan. Maybe somebody else can react to that. Certainly the specifications that they set on the product are very stringent. They expect a very high-quality product, trimmed a certain way and they're willing to pay for it. They're not willing to pay for spoiled meat; and with the distribution systems we have, most of it's frozen. Maybe they're looking for fresh, I don't know. I'm not that well-informed in the export market, so maybe someone else can respond to that.

B. *Reagan*: Jerry, I'd like to ask you a question going back to some things our good friends over at Auburn were discussing about our problem with fat. I'd like to know, is there any concern in the industry that we're going to overreact, as we're facing some competition coming in from poultry of low-fat product compared to ours? Our telephone is ringing 10 or 12 times a week, most people wanting to look at beef that has a lower percent of fat. Is there any industry concern that we're just going to overreact to this? My personal opinion is that if we do overreact, we just go from the type of carcass that we're handling in the cooler today to something that is completely the other extreme. As we try to compete with poultry or try to put out a product like that, we're going to come up with a product that is completely unacceptable to the consumer and lose even more of our market.

Leising: Certainly, there is a possibility that we could overreact. I think some of the packers are moving a little slower, trying not to overreact. We're going through a shaking-out period. Some people will overreact, some will probably hit it right on. The larger packers are being a little

conservative. I've heard some of the packers say ¼ inch but, in reality, I think that's probably not practical. I think there's a shaking out that's going to occur but I think it's going to settle in where it does meet the economic criteria for both the consumer and the packer. We really don't know where it's at right now.

Field: My experience has been that as slow as the packing industry is to move, it will be very hard for us to overreact. I do know of places in this country right now where lean, natural beef is selling for \$1.00 a pound above Choice beef. I know of at least four stores where it's selling on an equal volume with Choice beef. I think the point that is to be made is that there's certainly an opportunity for many different items in the counter today, and I don't think we should be talking about just Choice beef or just lean beef or just any other item that you want to mention.

As I see beef today, or other meats as well, it's not a commodity that you sell all the same thing any more. That's not what our consumers are wanting, and the consumer niche has certainly been emphasized the last little while. But there certainly is a market for these leaner products to sell and to sell at a higher price. They're doing it and you'll see more come on the market in the near future. I'd like to ask another question. I'd like to ask you to comment on the frozen steaks that you showed. You mentioned that your company is having some success with frozen steaks. Can you tell us how they're being sold and how you would think they should be sold and where's the market niche here?

Leising: The frozen steaks that we showed in the slides, that product is being sold in a wholesale-retail setting. In other words, a box store; a store that may sell tires and batteries, but also will sell frozen food and refrigerated foods. Division of the Walmart Corporation, Sam's Wholesale Clubs, you may have seen them, particularly in the southwest. They're merchandising frozen foods and refrigerated foods with a lot of other items. You have to buy four steaks at a time – not one steak – but the steaks are individually packed so that you can use one steak at a time. The setting is different in that the frozen case is a specialty case that has lots of frozen meat.

In many retail stores today, there is not a frozen meat section. If there is, it's the by-product or the product that's spoiled. So, the approach they're taking is selling a very high-quality product at reasonable prices. I think it gives the consumer a different approach to buying that type of product and certainly the bright red color sells the products. It's totally visible from both sides and has a guarantee of quality on the package. I guess what we're finding is that it is successful, and perhaps frozen meat is coming of age after all this time.

Field: Are these products kept in an enclosed box to protect them from light?

Leising: No, they're sold in a 40-pound case; they're 8 or 10-ounce steaks, clear, bi-vac film, 4 to a package, in a 2-pound package. Light does hit the product a little bit; but it's in a pull-out box, so you really don't let direct light on the product; and the product moves at a real high velocity so it doesn't sit there very long.

I think we've given up sometimes on some areas and I think we have to say, "Hey, the sky's the limit." We can try about anything, because I think we're working in a different market than we've worked in the past. We're identifying the

consumer; she's looking for a different type of product, and if we get something that we think will meet the consumer's need, let's try it. I don't think we should be brainwashed into the idea that "Well, it didn't work 20 years ago, so let's not try it." As everybody's been pointing out here, we need to pursue the idea of selling a variety of items. It may be a strip steak, but it may be sold 10 different ways. IBP makes 15 different varieties of tongue, and it's not for the U.S., it's

export. I guess what we're saying is: "We may not make as many pounds, but we're going to make it real high quality, we're going to make a lot of varieties of it and it's going to net more dollars when we're all done." It's fairly exciting. I think this part of the industry right now, to me anyway, has more new opportunities than we've seen in a long time. And from a research standpoint, there certainly are new opportunities.