Mr. Chairman, Members of the Reciprocal Meats Conference, and
Guests: Some few months ago when I was attending a meeting at the Uni-
versity of Tennessee Bill invited me to appear on this program, and I
accepted very gladly for several reasons. One, it gave me an excuse for
attending the Reciprocal Meats Conference, or otherwise I may not have
gotten here. Secondly, it was a long way off, and I thought it seemed
like a rather safe thing to do at the time. The third reason I would say,
he invited me to discuss the dual grading system, or rather our work in
this direction. I was very glad to visit with this group on this subject.
I think it is a subject that certainly should be of interest to you. I
don't know that I can present it in a very interesting manner, but I think
the subject itself is one of interest to you, and I am sure it is one that
you can make some very significant contributions to.

Two years ago I visited with you on the subject of the research
studies that we had gone through, leading upward toward this objective of
the developing the dual grading system.

I expect to visit with you rather informally on this subject.
I would like to say, first of all, that maybe I am going to stray away
from this title that Bill gave me. I didn't know what he was going to
give me until rather recently. I won't tell you how recently he wrote me,
but after this little exchange of the last session, Bill, and comments on
quality, I am just as glad I am not saying very much about quality. I
think it is a subject we are interested in. Maybe you people have been in-
terested in it quite a long while.

What is dual grading, what do we mean by this term, and how are
we using it? As we have used the term dual grading system is merely a
system that would give two identifications to a beef carcass. One identi-
fying its quality, the other a separate identification for its yield of
trimmed retail cuts. As we have visualized, the workings of such a system,
probably the quality designations would tend to be associated with the
nomenclature in fact at the present time, in effect, and some additional
designations, then begin to indicate the yield of trimmed retail cuts from
the round, the loin, the rib, and the square cut chuck, because this is
the area in which we have worked, and this is what we mean when we use this
term, cutability. Why is this important to us, or why have we become con-
cerned about it; I would say that our interest in this is strictly from
the standpoint of additional precision in the grading tools. Your interest
in it is much the same as it applies to carcass evaluation.

The problem, as you well know, is one in which we have had two
categories of characteristics that were important considerations in
arriving at grade, and hence value of carcass. One category of characteristics we might speak of as qualitative, or those characteristics believed to be associated with the eating quality of meat. Such things as marbling, firmness, color, texture, and maturity of the carcass. The other, quantitative considerations primarily concerned with here in conformation and finish, as they affect the proportion of desired to less desired cuts from the carcass, and ratio of eatable meat to bone. Unfortunately, as you well know, these characteristics are not perfectly correlated, consequently when you boil them down to a common denominator, and arrive at a final grade, you always come up with a compromise.

A good example of that might be as you well know, we allow superior quality to compensate for deficiency of conformation within certain limits. We have felt quality was the more important attribute, yet we have such situations as this occurring where carcass may have Prime quality, Good grade conformation, and end up grading it Choice. Quality compensates for the conformation, and puts it in a third grade different than any characteristics. That sounds silly, but how do you improve on this situation?

How can you then handle it? That is one of the objectives of this system. I believe as long as we boiled them down together, to a common denominator, then this sort of situation is almost inevitable.

Now, insofar as quality is concerned, I mentioned earlier here, that we had considered this to be the most important attribute. It is a very complex subject, and let me hasten to say, and not at all on the defensive, that our grade standards reflect the best information that our combined intelligence, yours and mine, has been able to come up with as yet, and we are all painfully aware of the inadequacy of those measures of quality. I say that merely to point out this is a very complex field, and one in which the answers apparently are going to come very slowly. Consequently, my remarks today will deal primarily with the considerations of the quantitative aspects of carcass evaluation. As a matter of little review for some of you who may have had limited interest in this subject, and who may not have followed it before, I would like to point out that we reported two years ago on a study that was started back in 1953, it was an idea in 1949, at least we finally got some money and started work on it about 1953, collected data through 1956, involving some 459 beef carcasses in which we were attempting to identify and evaluate the factors that affect the yield of retail cuts from the carcass. We went into it with a rather definite opinion, of course, and we went into it primarily because we did not have the basic information on which to develop a dual grading system.

In this study, we intentionally tried to select for variability. We went into each grade and selected not only typical carcasses, but those highly variable in conformation and finish. We selected carcasses covering some twenty weight and grade groups, and without boring you with a lot of the details of that study, just let me hasten to say that here we did take quite a long series of measurements, probably about all the measurements that have been proposed by the Reciprocal Meats Conference, I think that we followed the procedures that you recommended in the hope that we
might come up with a rather simple index of measurements that might indicate cutting yield of a carcass.

A little bit on the results. From this study, it became evident that we had in the population of beef carcasses a rather wide range of variation. We had carcasses that yielded a low of 40% in the carcass weight in the trimmed retail cut from the round, the rib, and the square cut chuck. We had a high of about 70%. This gives you a range of 30% to work in. We found that grouping them into grades in the conventional way eliminated about, or accounted for about half of the variability. We found, further, this cutability was as would be expected, largely associated with differences in fatness and conformation, additional finish reducing cutability and superior conformation increasing cutability. Of the two, fatness was much more important than conformation. We further found that of these various measurements that we had studied, that it was possible to put together a series of measurements that gave a rather reliable prediction of the yield of cuts. However, this was a rather complex set of measurements difficult to apply, involving such measurements as length of loin, thickness too of fat, over the rib and circumference of round. Not at all practical from the standpoint of a grading program. This is somewhat discouraging, because we had had some success, as you will recall, with a rather simple series of measurements being very highly associated with yield of lean cuts in pork, and this is a little discouraging to find it is not nearly so simple in beef, but certainly I think most of us would have suspected and predicted just this. We were encouraged to find that by using a subjective judgement for conformation, and fatness, which we had carried on at the same time in the collection of this data, that we were able to do a rather respectable job of predicting the cutability of the carcass. How can this be applied in a grading program?

Probably a number of ways, to date, we have tested two approaches. The first of these, was essentially a dividing of the quality grade into three segments, a high, an average and a low cutability. During the past year, we have collected data on some 245 carcasses, representing Prime, Choice, Good, and Standard quality of grades, in which we have gone into the cooler and subjectively put a prediction score on each carcass, followed it through to the retail warehouse, and there a complete retail cutout was made, values actually calculated, and you may be interested in the results of this phase of the test. I had a slide, but I somehow or another didn't seem to find it in my briefcase, so I'll write a few of these up on the board. The difference between the high and low group, by grade, this is percentage difference. This is value difference per hundred pounds. Prime, we had difference of 7.6% in cutability between the high and low group with the value difference of $6.29 per hundred. That amounts to what you can see, a little better than $37.00 on that carcass. Choice grade, this was 5.4%, value difference of $5.07 per hundred. Good grade, 5.1%, value difference of $4.25. The Standard grade, 4.6%, value difference of $4.49. The intermediate group, as you would assume, came in between. I would like to make this statement about the range of individuals. I am sometimes accused of overemphasizing this point, and I can see why. This is rather intriguing to me to consider the range of individuals within each of these grades, which in practically every case is more than double. In the Good grade, for example, we had 12.2 percentage range from...
the high individual to the low. With a value difference of better than $10 per hundred. This intrigues me because it represents the potential for improvement. Here we have this kind of variation within a quality grade, with practically no selection effort. This is occurring strictly by chance. This represents the potential for improvement, it seems to me.

You will be interested in the accuracy with which this could be predicted. I believe these studies were conducted in about twelve different groups. In other words, we grouped them according to weight, grade, and section, and we had a low correlation between the predicted and the actual yield, a low of .7 and a high of .9, with an average of around .8. This is a rather respectable correlation coefficient for this sort of data we think. It is approximate rather than closely that of the data obtained in the hog grading data a few years ago. I would like to comment a little on the second approach that we are taking on this.

It is just a matter of doing the same thing a little differently, there are advantages and disadvantages to both. This sort of system, I am sure you understand could work something, the one that we have been talking about such as the Choice one, Choice two or three designations to indicate cutability. Now, we have gone a different route and we have considered cutability completely independent of the quality grade. Prime, Choice, Good, what have you, and then we have taken our 30% and divided it into ten groups, 5%-wise, went through the same sort of procedure trying to predict in the color not only the group that this would fall in, for example, in number one group is intended to cover those yielding from 67 to 70%, and this is 64 to 67, and then on down. We tried not only to identify the group, but to predict the percentage of yield cuts from each carcass. This is the first attempt in this particular effort, in this particular direction, and on 162 carcasses, representing all grades from Prime through Canner, the correlation coefficient of actual yield and predicted yield was, I am almost afraid to put this up, because we have only done it one time. I don’t know if we can reproduce it or not, .923. The gentlemen who can take the bow for this are sitting back here, Charlie Murphy, and Dave Hallett are working rather closely with the latter stages of testing. We have various people on it through the years, but they are the ones doing it recently.

We will cut some more carcasses. We have plans now to cut some more, I believe they just knocked off last Tuesday, and some of this data is fairly new. This was the original idea when we thought of a dual grading system. When we thought of tying cutability to grade, since we were unable to come up with this, we fell back to something easier to start with, breaking the quality into three segments. Now we are giving this a try, and from this whole gamut of data, we hope to come up with something that might have possibilities.

I should comment on one additional piece of data that is being collected in connection with this study. Our earlier studies went down to a rather close trimmed retail trim, I should say, which involved the elimination of or removal of some bone. However, in this study we have gone all the way to boneless cuts. We first got our conventional retail cuts, and then took it on down to a boneless basis. This has some
interesting implications here from the standpoint of impact of muscularity differences, and we have taken a little bit of a look at this in two different ways. We have computed the ratio of shall we say salable meat to bone, and found that this varied greatly from 5.68, by conformation scores, this is groups not individuals, down to about 2.38 to one. This was a Canner. This is Prime, a Prime group. This is considering only the two. This is considering the ratio of salable meat to bone. We have gone one step further, then, and tried to relate the conformation score. The subjective conformation score to this lean, or shall I say salable meat, to bone ratio, because this does have some fat, particularly in the higher grades. I believe come up the first time around with the correlation coefficient point .68, I don’t know if more experience will improve that or not, but at least it is interesting.

This pretty much summarizes where we are on this study. This has been pretty factual up to this point. I would like to visit with you just a little bit on some of the factors that we think are important, and some of the plans that we have for the future. This sort of a system seems completely sound to us, because we have been thinking about it for a long time, been working with it pretty closely. I realize that your reaction to it may depend upon many things. At least I have found in visiting around the country that we get quite a variation in reactions and it depends on your point of view, certainly, from which you start. If you start from the point of view that you are not interested in grading at all, and there are people, apparently, that aren’t, then you will not like the system, because this system gets a little more precision into the operation. However, it is our feeling that the producer is interested in our reflecting just as accurately as it is possible to do these retailer demands back through the marketing channel so he can plan his production accordingly. We believe he wants this signal called just as accurately and clearly as it is possible to do. I think that there is one point, at least that I can certainly agree with all of the consumer preference studies that I have reviewed, and that is that consumers are very adverse to fat and probably are becoming increasingly so. Now, the solution to this problem, in my opinion, is not nearly as simple as reducing the length of time that cattle will stay in a feed lot. I am yet not convinced that consumers do not like the quality of meat associated with long feeding. I am sure they dislike the excess baggage that is often associated with it. I believe that unless some changes are made in our grading system that we probably will be continually forced to back up this quality line, and maybe follow this line of keeping them in a feed lot a little shorter time. However, not only does this pose some hazards in my opinion from the standpoint of consumer acceptability, but it does not solve this problem of variation within a grade. We still have this tremendous variation within a grade, and this does nothing to solve it. Many of you men are concerned with working on this problem of identifying strains of cattle with high muscularity meat type cattle, whatever you care to call them. They are cattle that have this unusual characteristic of high quality combined with minimum of excess fat, and they are quite muscular. We find a lot of them around in coolers that apparently have been produced by chance. I believe that if we are to give producers any encouragement in producing this type of cattle, that there are two things that are essential. One is that we furnish some sort of market identification. The other is that we provide a reasonable differential in price.
I am not too concerned about the latter in the case of cattle, I believe if we get them identified that the market differential will come.

I want to comment just a little bit on the industry reaction for this sort of a system, it has probably gotten more publicity than it deserves at this stage of the game. Most of the comments we have had from packers are certainly in the negative on this subject. I think there are probably two reasons why this is so. In the first place, packers look upon this as taking a little of the elbow room out of the operation. This becomes particularly important to national packers, packers who perhaps would prefer to get along without a grading system entirely. Others are apprehensive about their ability to sell cattle on a rather precise yardstick. Measured by a rather precise yardstick, without any identification at this point how they are going to identify them alive. This is probably a valid concern. However, it does not seem to me that this affords any new element in competition. Maybe it puts a little more premium on the ability of the cattle buyer. But, if he is able to compete at the present time, because of the superior capability of his cattle buyer, I think he will continue to compete satisfactorily. If he is operating at a disadvantage now because of the lack of ability in his cattle buyer, he will have the same trouble and maybe a little more so. As far as retailers are concerned, retailers have shown some interest, they have not commented to any great extent, but most of the comments have indicated that this would suit their needs, that they could buy with more precision.

Now, there has been some concern on the part of some that this might result in retailers putting more and more pressure on a particular segment of a grade such as Choice number ones, if we went that way. Actually, I don't think this will be the case. We have retailers now who will not take the wasty number one. But, if they could get an appropriate differential, one that the cut out figure would justify, they probably would be very happy to take it. So, it may actually open up a little wider distribution for this kind of meat. Producers are probably just about as hard to educate and work with as consumers, almost, at least. We have discussed this system with several organizations, and the American National has been very closely following it for about three years. We discussed it with the Corn Belt Feeders. The only organization to take an active stand on this at the present time is the American National Cattlemen's Association. As you know, they have had a grading committee active for three or four years. At their annual meeting in 1958, and also in '59, they adopted a resolution endorsing the principles of this dual grading system and urged the department to continue its work in field testing efforts, in an effort to get a proposal to accomplish this objective. We recognize that there are several steps ahead in this, and if and when it might ever get beyond the stage of an objective. One of these is that we must settle on the carcass technique, the technique that we will use to evaluate carcasses. Secondly, we must try to relate this to live cattle. This is an area in which we have had very limited experience. Some of you have had much more than we have. Just what the correlation will be between carcass cutability estimates, and the live estimates, I would not hazard a guess, but before we become overly concerned about this, I think there are only two or three things we need to keep in mind. One of these is that we faced about the same problem on hogs ten years ago. You couldn't get very many people to
agree that it would be possible to predict the yield of lean cuts in a hog as he walks around. Today we have factors that say they can estimate it more accurately when he walks around than they see the carcass hanging up. Whether they can do that, or not, I don't know, but it is an accepted technique. The same potential will be here, but it will be more difficult with beef than it was in pork and live hogs. Certainly I believe that the most difficult thing is being done today when a buyer actually predicts the cutting quality of a steer as he is walking around, and that essentially is what he is doing as he is evaluating borderline cattle. This, I hope, has given you a little insight into what we are doing and thinking. We very obviously need your help in a great many ways. We need your help in refinements of this system, making it more workable, we need you to tell this story to producers and other groups, explain it to them, and give them the facts, and if and when this ever becomes more than an objective, if and when it becomes a proposal, we need your support actively. We need you to stand up and be counted on this sort of a system as to what it has to contribute for the marketing of slaughtered cattle, and carcass beef.

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MR. COLE: Our next speaker from Texas, Mr. F. A. Orts. His topic is Bone and Muscle Relationships, and leads right into the last thing that John mentioned here before he got into the industry reaction, and the cattleman's reaction on the dual system. That was the bone relationship. Any time we are concerned by beef carcass evaluation, we think Texas is doing a good job, and we are going to hear some of their work now. Mr. Orts from Texas will talk to us now on Bone and Muscle Relationships.

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